

## **4. UPDATE OF STUDY AREA CONDITIONS**

The following section discusses the existing conditions of the Study Area. For ease of reference, the description of the various elements provided in the 2004 EA Addendum as they relate to this Addendum are repeated in this section. Section 4.1 describes the existing physical environment in terms of built and natural environment. The socio-economic environment (Section 4.2) includes a description of the archaeological and heritage features within the corridor, as well as, the surrounding communities. Lastly, Section 4.3 describes the existing economic environment.

### **4.1 Physical Environment**

#### **4.1.1 Built Environment**

##### **4.1.1.1 Roads**

The following is a summary of the roads within or adjacent to the sites of proposed changes to the EA-approved Mississauga Transitway plan.

- Highway 403 is a Controlled Access Highway with a 100 km/h posted speed and interchanges at major arterial roads including both Winston Churchill Boulevard and Hurontario Street. Highway 403 has three general purpose traffic lanes and one High Occupancy Vehicle lane in each direction. Buses are permitted (under certain conditions) to operate on the highway shoulders between Erin Mills Parkway and Mavis Road. Highway 403 sits within a basic 100 m wide right of way, and is the responsibility of the Ministry of Transportation of Ontario.
- Winston Churchill Boulevard is a four lane divided arterial and is a City of Mississauga road. It has a full Parclo “A” style interchange with Highway 403.
- Hurontario Street is a high standard six lane arterial and is a City of Mississauga road. It has a full Parclo “A” style interchange with Highway 403.
- Rathburn Road is a four lane collector and is a City of Mississauga road.
- Tomken Road is a high standard four lane arterial and is a City of Mississauga road.
- Dixie Road is a high standard six lane arterial and is a Region of Peel road.
- Fieldgate Drive is a two lane collector and is a City of Mississauga road.
- Eastgate Parkway is a high standard four lane arterial and is a City of Mississauga Road. Between Cawthra Road and Fieldgate Road, Eastgate Parkway lies within the provincially-owned Parkway Belt West.

None of the roads along or crossing the corridor currently feature marked or designated bicycle lanes.

##### **4.1.1.2 Transit**

Public transit services in the corridor are provided by Mississauga Transit (local) and GO Transit (interregional). There is no intercity bus service currently in operation in the corridor. Mississauga Transit operates a variety of express, regular, and feeder / shuttle bus routes, using all the arterials and most collectors in the corridor (although not every

road in the Eglinton Corridor has a route). GO Transit operates along Highway 403, stopping at the Mississauga City Centre. GO Transit also serves the Credit Valley Hospital on Erin Mills Parkway north of Highway 403.

#### **4.1.1.3 Utilities Within / Crossing Corridor**

There are eight pipelines (with five owners) running along the BRT corridor, along with various other crossing pipes. The pipeline operators were involved in both the 1992 EA and the 2004 EA Addendum for the Mississauga BRT. Specific crossing/relocation details were not identified at that time. All pipelines were exposed in the field in mid-2008, to confirm their location and depth in areas of potential conflict with the busway. All pipelines were found to have at least 1.5 m of ground cover.

In the area between Winston Churchill Boulevard and Erin Mills Parkway, the following pipelines are present:

- Enbridge Pipelines, Inc.: 762 mm diameter oil pipeline (formerly Interprovincial Pipeline) within a 3.048 m wide leased easement within the south side of the Hydro One corridor
- Enbridge Gas Distribution Inc.: 900 mm diameter natural gas pipeline parallel to and south of the Enbridge oil pipeline; also, two parallel north-south gas pipelines (500 mm and 250 mm high pressure) cross the corridor approximately 50 m west of Winston Churchill Boulevard.
- Sun-Canadian Pipe Line Company: parallel 200 mm and 300 mm diameter oil pipelines, running east-west immediately north of the hydro towers, at the Winston Churchill site only; the pipelines cross to the south of Highway 403 east of the interchange.
- Imperial Oil – Sarnia Products Pipeline: parallel 250 mm and 300 mm diameter oil pipelines running east-west approximately 20 m north of the hydro towers at the Winston Churchill site only; the pipelines also cross to the south of Highway 403.

In the area between Hurontario Street and Renforth Drive, the pipelines are present between Cawthra Road and Fieldgate Drive only. At Cawthra station, the Sun-Canadian pipelines are on the north side of the hydro corridor. The 300 mm Sun-Canadian pipeline does, however, swing to the south of the hydro line for 400 m at Tomken Road to get around the hydro substation there. Both Sun-Canadian pipelines stay to the north of the hydro lines for the rest of the segment.

The two Imperial Oil (Sarnia Products) pipelines run along the north edge of the corridor from Cawthra to Fieldgate.

East of Cawthra, the Enbridge oil pipeline shifts from the north side of the Parkway Belt to run along the south side of the hydro corridor to east of Fieldgate. The Enbridge gas line stays north of the Parkway Belt until east of Dixie Road, where it swings south to run alongside the Enbridge oil line to east of Fieldgate.

Two Trans-Northern oil pipelines (250 mm and 300 mm diameter) enter the Parkway Belt from the south, midway between Cawthra and Tomken. They split to get around the Tomken hydro substation, the 300 mm pipe staying to the south and the 250 mm pipe

skirting the site to the north. They rejoin the Sun-Canadian and Imperial Oil (Sarnia Products) pipelines east of Tomken Road to create a six-pipe corridor between the hydro towers and the north property line of the Parkway Belt. Along with the two Enbridge pipes to the south of the hydro line, this makes eight pipelines between Tomken and Fieldgate.

There is a 406 mm thick casing over the Trans-Northern 273 mm pipeline crossing Dixie Road. Pipelines crossing Tomken road must be investigated for any casings before the design. These casings may have to be extended beyond the road.

Over the course of the development of the Mississauga BRT plans, efforts have been made to avoid impacts to pipelines. However, some conflicts may be unavoidable. The following table summarizes discussions between the Project Team and the pipeline operators regarding National Energy Board (NEB) applicability and requirements related to possible effects associated with the Mississauga BRT. Although the study area includes pipelines regulated by the NEB none of the proposed works are anticipated to result in the need for a permit from the National Energy Board.

**Table 4-1: Utilities: Summary of Activities by Project Phase**

Pipeline	Pipeline Category / NEB Regulation	Agreement Requirements	
		Crossing	Relocation (with mutually acceptable design and cost sharing solution)
Sun-Canadian Pipe Line Company Limited	Provincial; not regulated by NEB	All crossings and relocations would only require agreement from Sun-Canadian Pipe Line Company Limited.	
Imperial Oil (Sarnia Products Pipeline)	Provincial; not regulated by NEB	All crossings and relocations would only require agreement from Imperial Oil.	
Enbridge Pipelines	Interprovincial; NEB regulated	Crossing agreement would be required.	NEB permit required only if relocation exceeds 100 m or is within 30 m of a body of water.
Enbridge Consumers Gas	Local: not regulated by NEB	No NEB regulated pipelines in corridor. All crossings and relocations would only require agreement from Enbridge Consumers Gas.)	
	Interprovincial; NEB regulated		
Trans-Northern Pipelines	Interprovincial; NEB regulated	No NEB approvals required for crossings.	NEB approvals required for relocations.

*Other Utilities – Around Winston Churchill Boulevard and Erin Mills Parkway*

The following utilities are present around Winston Churchill Boulevard; please note that storm sewers are not included:

- Rogers Cable: buried fibre optic cable line along the east edge of Winston Churchill Boulevard; aerial fibre optic cable running north-south approximately 175 m east of the centre line of Winston Churchill Boulevard;

- Bell Canada: Buried cable along east side of Winston Churchill Boulevard, south of Highway 403, and conduit along east side of Winston Churchill Boulevard;
- Hydro One: two 230 kV overhead power lines (east-west) north of Highway 403 in the utility corridor. In addition, Hydro One is investigating a potential new line-tap to the transformer site in the north-west quadrant of the Winston Churchill Boulevard/Highway 403 interchange;
- Enersource (Hydro Mississauga): both buried and aerial hydro facilities at the Winston Churchill Boulevard site;
- Region of Peel (water):
  - 400 mm diameter concrete water main running north-south, approximately 30 m east of the centre line of Winston Churchill Boulevard;
  - 400 mm diameter concrete water main running north-south, approximately 30 m west of the centre line of Winston Churchill Boulevard (parallel to and immediately east of the pair of north-south Enbridge gas pipelines)
- Region of Peel (electrical): various buried electrical ducts within the arterial right-of-way, providing power to the traffic signals at the E-N/S ramp terminal intersections; and
- Ministry of Transportation of Ontario: High Mast Light standards at varying intervals (100 m – 250 m), approximately 25 m north of the edge of pavement of Highway 403; powered by buried electrical cable in PVC duct running along the outside edge of both interchanges (offset approximately 5 m from the edge of ramp pavement).

*Other Utilities – between Hurontario Street and Fieldgate Drive*

Between Hurontario Street and Cawthra Road, the BRT corridor encounters MTO high mast light standards at both interchanges, along with power and communications lines related to the Ministry's Traffic Management System on Highway 403.

Region of Peel water mains are present as follows:

- N-S along Tomken Road (1200 mm and 250 mm);
- N-S just west of Little Etobicoke Creek (regional Hanlan feeder main);
- N-S along Dixie Road (250 mm); and
- N-S along the west side of Eastgate Parkway, Fieldgate to Eglinton (300 mm).

There is a 250 mm Region of Peel sanitary sewer under the southbound lanes of the north-south leg of Eastgate Parkway between Fieldgate and Eglinton.

An Enersource pole line angles through the Parkway Belt in the vicinity of Cawthra Road. It continues along the north side of Eastgate Parkway to Fieldgate, along the west side of Eastgate from Fieldgate to Eglinton Avenue, and along the north side of Eglinton easterly to Renforth Drive. At Fieldgate, the Enersource lines are buried as they cross the Hydro One corridor, to avoid conflicts with Hydro One's east-west high-voltage lines.

Between Cawthra and Fieldgate, the twin 230 kV Hydro One overhead lines run in the utility corridor. A major Hydro One substation is located just north of the corridor, immediately west of Tomken Road.

There is an aerial Bell line along Dixie Road, and another running along the north side of Eastgate Parkway (on the Enersource poles) from Dixie to Fieldgate, continuing along the west side of Eastgate to Eglinton. On Eglinton, the Bell pole line runs along the south edge of the roadway, connecting with pole lines on the north-south crossing roads.

Electrical services and control boxes are provided at each signalized intersection in the corridor.

#### **4.1.1.4 Adjacent Land Uses**

The Mississauga BRT facility stretches across central Mississauga, through a variety of land uses. Most of the BRT facility is located in the Parkway Belt West, a broad swath of public lands stretching across the western half of the Greater Toronto Area. The Parkway Belt is reserved and designated for major interregional linear facilities, including hydroelectric transmission lines, pipelines, highways, and transit lines.

The following description focuses on the land uses immediately adjacent to the busway:

##### *Around Winston Churchill Boulevard*

In this segment, the busway is to be located between Highway 403 and the Hydro One transmission corridor. Several oil and gas pipelines have easements within and to the north of the Hydro corridor. The lands to the north of the Parkway Belt are developed for single family residential use; the homes back on the Parkway Belt and do not have direct access to the corridor.

##### *Around Hurontario Street*

The busway is located in the south part of the Parkway Belt, between Highway 403 and a vacant 30 m wide strip held by the provincial government in reserve for possible future Parkway Belt uses. These could be linear utilities or other interregional facilities in keeping with the intent of the Parkway Belt West Plan; there are no current or known plans for any use of the vacant lands. In order to preserve the lands for any potential Parkway Belt use, the Ontario Real Corporation (manager of the property on behalf of the Province) does not allow crossings, regrading, fill, permanent structures, or any other use of the vacant strip that would prevent, affect, or compromise the ability to use the land for Parkway Belt purposes in the future.

South of that strip, there is a condominium office complex immediately east of Hurontario Street, and single family residential lands from there east to Central Parkway. The Parkway Belt is fenced, with no direct access from adjacent properties.

##### *Tomken Road to Fieldgate Drive*

The busway in this segment is still in the Parkway Belt West, and runs between the Hydro One / pipeline corridor and the north side of Eastgate Parkway. The land uses along the north side of the Parkway Belt are largely warehouse industrial, although there is a two-pad arena at Tomken Road and the publicly-owned lands between Cawthra Road and Tomken Road are vacant. A high earth berm runs along most of the south side of

Eastgate Parkway; south of the berm is a 30 m strip preserved for future Parkway Belt uses, then a single family residential neighbourhood. The residential properties back on the fenced Parkway Belt and do not have direct access to the corridor.

#### **4.1.1.5 Future Land Uses**

The Mississauga BRT corridor is relatively mature, although significant potential for development and intensification (residential and commercial / office) remains in the City Centre area west of Hurontario Street. The Airport Corporate Centre and vacant lands east of Fieldgate Drive will continue to be filled in over time with prestige office and commercial uses.

There is no vacant land immediately adjacent to the facility that would be suitable for residential development. The vacant property east of Cawthra Road and north of Eastgate Parkway is designated by the City as future employment and public open space, but there are no specific plans currently associated with that block.

#### **4.1.1.6 Drainage and Surface Water**

The existing drainage system consists primarily of open ditches, culverts and storm sewers. The outlet points were identified and the contributing drainage areas were divided according to these outlet points. A summary of the outlet points and their contributing drainage areas are summarized below (noting that only those outlets in the vicinity of the Transitway segments that are the subject of this EA Addendum are described herein):

##### **Winston Churchill Boulevard Site**

The Winston Churchill Boulevard site is part of a 31.0 ha area (consists entirely of Highway 403 and Hydro corridor areas) that drains via twin 1200 mm diameter pipes across Highway 403 just east of Winston Churchill Boulevard. Runoff generated from the portion of this area located north of Highway 403 (21.2 ha) is conveyed by side ditches and culverts under the highway ramps to the upstream end of the twin 1200 mm pipes. Minor event runoff from this area combines with runoff from Highway 403 (9.80 ha) and is conveyed through the twin 1200 mm pipes to a ditch on the south side of Highway 403. The ditch runs easterly to a stormwater management pond, and is ultimately discharged from this facility to Sawmill Creek through twin 2590 mm diameter storm trunk sewer.

##### **Hurontario Street / Rathburn Road Site**

**Outlet 4 – Twin 1850 x 1000mm CSPA and Municipal Sewer:** The twin culverts run southerly across Highway 403 just east of Hurontario Street and discharge to a 1350 mm diameter municipal storm sewer and ultimately to Cooksville Creek via the double box culvert at Rathburn Road. The overall contributing drainage area to Outlet 4 is approximately 9.35 ha, consisting primarily of Highway 403 corridor. Runoff from the area south of Highway 403 (1.30 ha) enters the 1350 mm diameter municipal sewer at a ditch inlet located in the south-east quadrant of the Highway 403 and Hurontario Street intersection.

**Outlet 7 – Intermittent Drainage Channel and Municipal Sewer:** Approximately 58.7 ha of vacant lands, Hydro and Highway 403 corridor and residential development drain to

the intermittent drainage channel located approximately 200 m west of Tomken Road. Runoff collected by the drainage channel is discharged into a large municipal sewer at Eastgate Parkway via two ditch inlets. Runoff from an additional 2.54 ha of the Eastgate Parkway corridor is also conveyed to Outlet 7; therefore, the total drainage area to Outlet 7 is 61.2 ha. The municipal sewer conveys flows to the west bank of Little Etobicoke Creek. Flows in excess of the capacity of the ditch inlets from the 58.7 ha to the north are conveyed eastward via roadside ditch and ultimately to Outlet 8, discussed below. At the time of this report, the capacity of the ditch inlets and downstream municipal sewer were unknown. As a result, it was assumed that the ditch inlet and sewer system were designed to collect/convey the minor storm event (i.e. 10 year event). The capacity of this system must be confirmed at the final design stage; the BRT drainage system will then be designed to reflect the available capacity.

**Outlet 8 – Little Etobicoke Creek (West Side):** Drainage from approximately 8.9 ha is conveyed to the west bank of Little Etobicoke Creek via municipal storm sewers and open channels. Major event runoff from an additional 58.69 ha (Catchment 7-1) is also conveyed to this outlet via roadside ditches and channels. Runoff from the vacant lands and Hydro corridor west and east of Tomken road (Catchments 7-1, 8-3 and 8-4) is conveyed within a channel to a wet pocket prior to discharging to Little Etobicoke Creek. Runoff from Eastgate Parkway and Tomken Road is conveyed to Little Etobicoke Creek via storm sewers.

**Outlet 9 – Little Etobicoke Creek (East Side):** Major and minor event runoff from approximately 20.69 ha west of Dixie Road (Catchments 9-1 to 9-3), including Hydro corridor, light industrial/commercial development and Eastgate Parkway, is conveyed to the east bank of Little Etobicoke Creek via roadside ditch and overland flow. Runoff from approximately 14.82 ha of this area (Catchments 9-1 and 9-2) is conveyed through a wet pocket within the Hydro corridor prior to discharging to the creek. Major event runoff from an additional 1.76 ha constituting Dixie Road is also conveyed to the east bank of Little Etobicoke Creek. These flows do not enter the wet pocket and are conveyed via sheet flow along the Dixie Road and Eastgate Parkway to the roadside ditches and ultimately to the Creek.

**Outlet 10 – Eastgate Trunk Sewer:** This sewer was constructed in conjunction with the Eastgate Parkway extension which extended Eastgate Parkway northward to Eglinton Avenue. The sewer begins at Dixie Road and discharges to the west bank of Etobicoke Creek. The trunk sewer collects major and minor event runoff from approximately 102.2 ha (Catchments 10-1 and 10-2), including Eastgate Parkway and light industrial/commercial lands. The sewer also collects minor event runoff from approximately 1.8 ha of Dixie Road. The Stormwater Management Report – Eastgate Parkway Extension (Dillon Consulting Ltd., February 1993) document indicates that the Eastgate Parkway trunk sewer was designed to convey minor and major system flows up to the Regional storm event for 95.48 ha and to accommodate any future flows generated by the proposed BRT.

The ditches along Highway 403 also provide water quality control to the flows in the highway corridor.

Existing drainage features in each of the Addendum Study Areas are illustrated in Figures 4-1 to 4-5.

#### **4.1.2 Natural Environment**

This section describes the existing natural environmental conditions along and in the vicinity of the BRT project. The general characteristics of the features are described, and any relevant sensitivities identified, with specific consideration of the current federal, provincial and local policy context. Potential adverse effects of the proposed construction and operation of the BRT, including both permanent and temporary direct encroachment as well as indirect/secondary effects (e.g., spills, salt use) are identified. Measures to mitigate and/or 'compensate for' these potential negative effects associated with each of the six proposed modifications to the EA-Approved plan are discussed in their respective sections of this report.

This material refers to the portions of the BRT corridor that are subject to this Addendum as described in Sections 5 through 9; a more detailed description of the natural environmental conditions, impact assessment and mitigation for the entire project is provided in the original EA Report and the CEAA Screening Report.

The natural environment features are depicted in Figures 4-6 to 4-9.

##### **4.1.2.1 Designated Natural Areas and Policy Areas**

###### *Provincial and Regional*

Based on information from Ministry of Municipal Affairs and Housing (2002 and 2005), the project limits are outside of Provincial Land Use and Environmental Plans areas (Oak Ridges Moraine, Niagara Escarpment and Greenbelt). Based on a review of MNR Natural Resources and Values Information System (NRVIS) information, a Natural Heritage Information Centre (NHIC) database query, and information received from Credit Valley Conservation (CVC), and Toronto and Region Conservation Authority (TRCA) and the City of Mississauga, there are no designated natural features within or adjacent to the project limits including ANSIs (Areas of Natural or Scientific Interest – Life or Earth Science), evaluated wetlands (Provincially Significant or Locally Significant Wetlands) or other federally or provincially designated areas.

###### *City of Mississauga Natural Areas*

A Natural Areas Survey for the City of Mississauga was undertaken during 1995 and 1996 (Geomatix 1996). The Natural Areas Survey identified and designated natural features as Natural Areas (NA) Special Management Areas (SMAs), Linkage Areas (Linkages) and Residential Woodlands. The Natural Areas database current is reviewed and updated on a regular basis. Using the most recent maps and fact sheets (City of Mississauga 2006), several of the features within the project limits have local designations identified through these studies. These features within the project limits are discussed in the following Sections of the report.

##### **4.1.2.2 Fish and Fish Habitat**

The BRT alignment crosses Cooksville Creek (south of Hurontario Street / Highway 403 interchange) and Little Etobicoke Creek (east of Tomken Road)

Aquatic field surveys were conducted in 2007. Additional general information was collected during site visits with TRCA in 2007 and 2008. Fluvial geomorphic

information was collected in 2008. The information collected was used to update and supplement the information provided by the agencies and gathered from background sources.

Specific fish community inventories (e.g., electrofishing) were not conducted by Ecoplans Limited (Ecoplans) staff given the availability of fish community sampling information and related input from TRCA, CVC and MNR.

### **Existing Conditions**

#### *Cooksville Creek*

The BRT alignment crosses Cooksville Creek in the vicinity of Hurontario Street.

Upstream of Highway 403, the open section of creek channel is confined in a narrow corridor between the single and multi-family residential blocks north of the highway. It is enclosed for approximately 150 m under the highway. It then flows in an open but modified channel section between the highway ramp and Hurontario Street (which would have been crossed / modified under the EA approved busway plan), and is then enclosed in a large twin cell box culvert for another approximately 230 m downstream of Hurontario Street and Rathburn Road East. The channel flows along the base of a retaining wall along Rathburn Road East. Grade control structures at and downstream of the Hurontario Street crossing act as permanent barriers to upstream fish movement.

The currently proposed busway alignment crosses the culvert immediately east of Hurontario Street. The open reaches of Cooksville Creek upstream of the 'crossing', west of Hurontario Street and up and downstream of Highway 403, are not affected by the proposed alignment.

The CVC considers the open portions of this watercourse within the project limits to have the potential to support a warmwater fishery (City of Mississauga 1994); however, no fish were collected at the sampling station near Rathburn Road (upstream of the grade control structures) in July of 1995. Although flow is permanent, there may be insufficient refuge habitat available in the short open reach to support fish, and the grade control structures downstream of the project limits and the long enclosed reaches preclude re-colonization from downstream reaches. Therefore, these reaches do not appear to support direct fish use within the BRT project limits. However, these reaches contribute to downstream habitat through conveyance of flow and some limited inputs of allochthonous materials (e.g., nutrients and detritus).

#### *Little Etobicoke Creek*

The BRT alignment crosses Little Etobicoke Creek on the north side of Eastgate Parkway. The existing crossing at Eastgate Parkway is a 3 cell culvert with all cells set at the same elevation. Little Etobicoke Creek is considered by the TRCA to support a degraded warmwater fish community with common and prevalent habitat, affected by urbanization and stormwater issues (debris, water quality, etc.) (City of Mississauga 1994). Through the project limits and vicinity, it appears that the Little Etobicoke Creek channel was straightened and modified historically. Much of the channel banks are armoured with riprap (which is now overgrown with vegetation) or gabions (downstream).

When Eastgate Parkway was constructed across the creek (circa 1989) the triple box cell culvert was opened to all flow. Subsequently, a concrete barrier was installed to divert the creek into the easternmost cell under low flow conditions, while leaving the other two cells available for use under higher water levels. There is also a low concrete wall (weir) extending across the channel upstream of the culvert that creates a barrier to movement under at least low flow conditions. As well, a weir made of stone-filled wire baskets and several steep concrete features downstream of the Eastgate Parkway crossing act as seasonal barriers to the upstream movement of fish.

The morphology of the channel is predominantly flats, with some riffles. Substrates are dominated by cobble, which may have been placed during the historical channel works, and/or sloughs off the banks. The woody riparian corridor is narrow upstream, widening downstream.

Historical (1949) fish sampling records at the closest sampling station located approximately 1.25 km downstream of the project limits near Burnhamthorpe Road East recorded the presence of three species of tolerant warmwater bait/forage fish (Common Shiner [*Luxilus cornutus*], Creek Chub [*Semotilus atromaculatus*], Brook Stickleback [*Culaea inconstans*]), as well as Redside Dace (*Clinostomus elongates*) (NHIC 2008). The Redside Dace record is considered 'historical', and this species is considered to be no longer present this creek.

#### **4.1.2.3 Vegetation and Wetlands**

The vegetation inventory focused on compiling and reviewing existing information within the project limits, augmented with field surveys focused in specific locations to refine the site specific data base and address any data gaps, and support the impact assessment process. The City's Natural Areas Survey (City of Mississauga 2006) provides an existing information base for most of the natural areas in the vicinity of the project. Initial field surveys were conducted in 2007 with additional surveys carried out in 2008. The scope of the field work and terrestrial resources analyses included:

- classifying or verifying previous classifications for vegetation communities, using the Ecological Land Classification (ELC) System for Southern Ontario (Lee et al. 1998);
- evaluating the sensitivity and significance of vegetation communities, using the "Natural Heritage Resources of Ontario: Vegetation Communities of Southern Ontario" (Bakowsky 1996; NHIC 2008);
- evaluating significance and sensitivity of flora and fauna recorded during field surveys, using Newmaster et al. (1998) and the NHIC website (2008) for provincial and national significance;
- preparing a vascular plant species list; and
- taking representative site photographs.

The BRT project limits traverse an urbanized landscape dominated by residential and commercial land uses. The project limits are located immediately adjacent to the existing road/highway network and much of the project is within the parkway belt infrastructure

corridor. As a result, the terrestrial features are culturally influenced or anthropogenic in origin and character, and heavily influenced by the existing land uses.

The vegetation within the study corridor is dominated by cultural meadows (CUM 1-1), with scattered pockets of culturally-influenced meadow marsh/marsh, successional growth/treed patches and occasional remnant forest patches. The cultural meadow communities are dominated by species such as Brome Grass (*Bromus inermis* ssp. *Inermis*), Canada Goldenrod (*Solidago canadensis*), New England Aster (*Aster novae-angliae*), Canada Thistle (*Cirsium arvense*), Teasel (*Dipsacus fullonum* ssp. *sylvestris*), Queen Anne's Lace (*Daucus carota*) and Red Raspberry (*Rubus idaeus* ssp. *Melanolasius*). This early-successional community is of low quality and low sensitivity, comprised of common species that are tolerant of disturbed conditions.

The cultural influence is reflected in the high proportion and wide distribution of non-native, disturbance-tolerant and invasive species.

Within the cultural meadow dominated landscape are numerous small pockets of wetland vegetation; the larger features are discussed below. These wetlands have formed in local topographic depressions (usually created through previous earth works in the utility corridor) that are poorly drained. Drainage ditches also contain pockets / strips of wetland vegetation. Given that the surface-level geology within the project limits consists of silt and clay associated with Halton Till deposits, it is unlikely that significant hydraulic connectivity with the underlying groundwater system exists. As such, these wetland pockets are likely sustained by precipitation and surface water runoff.

The wet pockets are dominated by a variety of common, disturbance tolerant wetland vegetation species that colonize wet areas quickly, such as Common Cattail and Reed Canary Grass. Giant Reed, an aggressive invasive species is abundant, and Purple Loosestrife also occurs commonly.

Specific characteristics of vegetation and habitat features along the BRT project limits are described below.

#### *Around Winston Churchill Boulevard*

The vegetation is dominated by cultural meadow. Scattered landscape plantings and successional growth include patches of Manitoba Maple (*Acer negundo*), Sugar Maple (*A. saccharum*), Trembling Aspen (*Populus tremuloides*), White Spruce (*Picea glauca*), Austrian Pine (*Pinus nigra*), Eastern White Cedar (*Thuja occidentalis*), Norway Spruce (*Picea abies*) and occasional Red Cedar (*Juniperus* sp.). These species are tolerant of disturbance and the vegetation communities are of low quality and diversity. Specific vegetation communities are described below.

- There are two small (>0.3 ha) patches of woody vegetation located north of Highway 403, west and east of the Winston Churchill Boulevard interchange. These patches contain maple, Red and White Oak, White Pine, White Ash and Trembling Aspen in the canopy with groundcover dominated by old field and invasive species. Additional landscape plantings and successional growth of White Spruce, Austrian Pine, Norway Spruce, Manitoba Maple and Eastern White Cedar are present within the N-W ramp loop. These species are common and tolerant of disturbance and

several are non-native, likely planted for their tolerance to the surrounding conditions. The vegetation patches are of low ecological quality and sensitivity.

- Five small isolated pockets of mineral meadow marsh vegetation occur along the north side of Hwy 403, east and west of Winston Churchill Boulevard. These pockets are of low quality and sensitivity being almost exclusively dominated by either Reed Canary Grass or Narrow-leaved Cattail with some Phragmites, and Purple Loosestrife. All of these species are aggressive and tend to out-compete other wetland plants to form homogeneous mats, and the latter two species are also non-native. These features are also cultural in origin, having formed in shallow depressions along the infrastructure corridor where water collects seasonally / following storm events on the till-based soils.

#### *Around Hurontario Street*

RW1 (City of Mississauga Natural Area Remnant Wooded Area – RW1) is a small (approximate 2 ha) linear dry-fresh sugar maple-white ash deciduous forest (FOD 5-5) located on a low berm adjacent to and south of Highway 403 between Hurontario Street and Central Parkway East. This wooded area is dominated by Sugar Maple (*Acer saccharum* ssp. *Saccharum*), Bitternut Hickory (*Juglans cinerea*), Shagbark Hickory (*Carya ovata* var *ovata*) and White Ash (*Fraxinus americana*), in association with, American Elm (*Ulmus americana*), Basswood (*Tilia americana*), and the occasional Red Oak (*Quercus rubra*). It is in fair condition but disturbed due to residential encroachment, dumping, compost, garbage, trails, and invasive plant species (Garlic Mustard and Buckthorn).

RW1 provides some local wildlife habitat and woody cover for common wildlife species, including common migratory bird nesting and foraging. However these functions are limited by the isolation of this small feature in the surrounding urban landscape and its proximity of Highway 403 (noise, bird song cannot be heard, etc.), and the understory disturbance due to active dumping by local residents and recreational uses (i.e., mountain bikes).

#### *Tomken Road to Fieldgate Drive*

NE4 (City of Mississauga Natural Area NE4) is a sub-mature to mature deciduous wooded area located approximately 300 m north of Eastgate Parkway and outside the project limits. This contains a variety of vegetation communities and provides habitat to a variety of forest flora and fauna species.

NE4SMA (City of Mississauga Natural Area NE4 Associated Special Management Area) is located immediately to the south of Natural Area NE4, along the north side of Eastgate west of Tomken Road. NE4SMA is predominantly cultural meadow (CUM 1-1) (e.g., Brome Grass, Canada Goldenrod, New England Aster, Canada Thistle, Teasel, Queen Anne's Lace and Red Raspberry), with numerous (approximately 9) small patches of wetland vegetation occupying the low-lying areas in the undulating / hummocky surface topography and adding to the overall diversity of the habitat mosaic. Digger Crayfish, a species of interest to TRCA (Pers. Comm. S. Lingertat November 30, 2007a) has been identified throughout this unit.

Of the several wet pockets located throughout NE4SMA, one of the largest and least disturbed is a Cattail Mineral Shallow Marsh (MAS 2-1), dominated by Narrow-leaved Cattail and located in the northern half of the natural area. This area is within TRCA's Generic Regulation Limits. Other smaller meadow/shallow marsh pockets include the following:

- MAS2-1b (roadside ditch – west section) is a Cattail Mineral Shallow Marsh dominated by Narrow-leaved Cattail (*Typha angustifolia*);
- MAS2-1b (roadside ditch – east section extending into NE4SMA) a Cattail Shallow Meadow Marsh dominated by Narrow-leaved Cattail;
- MAM2-b (central eastern section of NE4SMA) is a Mineral Meadow Marsh dominated by Purple Loosestrife (*Lythrum salicaria*); and
- MAM2-b (south western section of NE4SMA) is a Mineral Meadow Marsh dominated by Purple Loosestrife within the TRCA Generic Regulation Limits.

Overall vegetation quality and sensitivity are low. Communities and species are common. The area is heavily disturbed as a result of active dumping, occasional pipeline maintenance activities and on-going recreational use, including ATVs and dirt bikes, which have created an extensive trail system. The NE4SMA area is not designated as a Natural Area, but is recognized as a buffer zone, with potential for restoration, in relation to Natural Area NE4. The area exhibits good opportunities for enhancement based on its size and association with NE4. The NE4SMA is also identified by TRCA as a Habitat Implementation Plan (HIP) area (Pers. Comm. S. Smith, December 11, 2007d). The HIP is a targeted strategy that is the mechanism by which the concepts of the TRCA Terrestrial Natural Heritage Program, Fisheries Management Plan, and Watershed Management Strategy can be implemented.

There are two wetland pockets located on the east and west sides of Tomken Road, south of Eastgate Parkway. The first is a very small (>0.1 ha) Reed Canary Grass Mineral Meadow Marsh (MAM2-2) unit west of Tomken Road. The second is a slightly larger (~0.2 ha) Mineral Meadow Marsh dominated by Purple Loosestrife east of Tomken Road. Both of the features are small seasonally wet depressions along the south side of an existing earthen berm.

Dominated by common, disturbance tolerant and invasive wetland species, these wet pockets are of low sensitivity due to past construction disturbances (berm and residential creation), recreational practices (fire pits and bike trails), dumping, and proximity to major thoroughfares such as Eastgate Parkway and Tomken Road.

The Little Etobicoke Creek valley has multiple designations within the City of Mississauga. The valley slopes of Little Etobicoke Creek are designated Valley Effect Zone (protected to preserve natural environment of watercourse) and the valley is designated in the City of Mississauga's OP as Natural Heritage System. The north portion of the valley (~100 m north of BRT alignment) is identified as Natural Area NE3 and the south portion of the valley (south of Eastgate Parkway) is identified as RW6 in the Mississauga Natural Areas Study.

Within the project limits, riparian vegetation consists of Heart-leaved Willow (*Salix eriocephala*) and other willow species, Staghorn Sumac (*Rhus typhina*), Red Osier Dogwood (*Cornus stolonifera*), wild grape, golden rod species, sedges, rushes.

Two lower lying pockets, one just west of the Little Etobicoke Creek valley, and one just to the east of the creek, support small wetland communities (unlabeled on Natural Area Survey):

- The wetland pocket on the east contains a small (0.4 ha) Cattail Mineral Shallow Marsh (MAS2-1) dominated almost entirely by Narrow-leaved Cattail. Digger Crayfish, a species of interest to TRCA (Pers. Comm. S. Lingertat November 30, 2007a) has been identified along the north edge of this unit. A similar, very small wetland pocket is located further east of this larger unit.
- The wetland pocket on the west contains a mix of Mineral Meadow Marsh (MAM2) dominated by Phragmites. This area of hydroelectric corridor is actively mown (located south of an arena), and the Phragmites meadow marsh is mown up to the edges). A Narrow-leaved Cattail Shallow Meadow Marsh (MAS2-1b) within the roadside ditch also forms part of this unit. The marsh extends along the drainage ditch between Tomken Road and Dixie Road.
- Closer to Dixie Road, a portion of this unit has been bisected by a new access road within the hydroelectric corridor. A culvert has also been installed. All of these works are within the TRCA Generic Regulation Limits.

The vegetation and habitat system is dominated by tolerant and common species and communities, as such, the sensitivity of this system is low. However the location in and adjacent to the Little Etobicoke Valley, with natural areas further to north and south, provide opportunities for enhancement.

Two small (each 0.2 ha) pockets of Narrow-Leaved Cattail dominated Cattail Mineral Shallow Marsh (MAS2-1b) are located east of Dixie Road, north of Eastgate Parkway. Several very small wetland pockets (each <0.1 ha) dominated by narrow-leaved cattail are situated under the hydroelectric corridor and between two pipelines on the east side of Dixie Road. Surrounding vegetation consists of cultural meadow communities dominated by old field species.

Two other very small (each <0.1 ha) wetland pockets occur adjacent to the bend at Eastgate Parkway. Both of the features are small wet or seasonally wet depressions on the south side of an existing earthen berm. Typical of the landscape features generally, these wetlands are of low sensitivity and are culturally influenced due to their location and past disturbances with the development of the hydroelectric lines and towers, pipelines and access road.

#### *City of Mississauga Linkage Area*

Linkage Areas are defined as areas which serve to link two or more of the components of the Natural Area Systems within the City, or to natural areas outside of the City boundaries. Within the project limits, this Linkage Area extends along the north side of Highway 403 and Eastgate Parkway, within the hydroelectric / utility corridor, from near Mississauga Road, continuing to the east of the point where Eastgate Parkway curves

north, to 'connect' the Etobicoke and Little Etobicoke Creek valleys. Within the project limits, it includes portions of the following areas (also discussed above):

- City of Mississauga Natural Area (NE4) and associated Special Management Area (NE4SMA) and associated wetlands;
- Cultural meadow with scattered woody successional growth and associated wet pockets north of Eastgate Parkway; and
- Valley of Little Etobicoke Creek.

The Linkage Area remains dominated by cultural meadow vegetation, ubiquitous along the project limits, with the typical meadow marsh pockets and occasional successional woody growth. The exception is the watercourse valleys.

The numerous small (<0.3 ha) seasonally wet, monoculture meadow and shallow marshes are dominated by common, disturbance tolerant wetland vegetation species. The Ecological Land Classification (ELC) communities are classified as Narrow-leaved Cattail Shallow Marsh (MAS 2-1), Reed Canary Grass Meadow Marsh (MAM 2-2) or Mineral Meadow Marsh (MAM 2). As noted, most appear to have formed in the minor topographic depressions created by the construction and maintenance of infrastructure and ditching that allow water to collect on the imperfectly to poorly drained clay soils. Several of the wet pockets are 'regulated' by TRCA (see below), including some of the roadside ditches along Eastgate Parkway (classified as Narrow-leaved Cattail Shallow Marsh [MAS 2-1]). These vegetation communities are of low sensitivity, comprised of common species that are tolerant of disturbed conditions and many are dominated by Phragmites.

#### *Sensitivities and Management Implications*

In general, the vegetation occupying the majority of the study corridor is cultural in character, reflecting the influence of the utility and transportation corridors within the urban landscape. Vegetation species are predominantly common and tolerant. The level of disturbance is generally high, as reflected by the high proportion and wide distribution of non-native and invasive species. The vegetation communities and species located along and immediately adjacent to the majority of the BRT alignment are therefore not considered sensitive.

#### **4.1.2.4 Wildlife**

Wildlife habitat values along this section of the project limits are limited generally given the characteristics of the predominantly cultural meadow habitat system, its proximity to a busy highway corridor and the broader highly urbanized landscape. While common meadow and urban-adapted species such as Meadow Vole, Gray Squirrel, Raccoon, Cottontail Rabbit and Striped Skunk will be present in the area generally, habitat for most species is limited by the lack of woody cover and the confinement between the urban area and highway. Foraging by common raptors such as Red-tailed Hawk is also likely, however the remnant woody patches in the vicinity do not provide nesting trees. Local migratory use by bird species passing through is also possible, however nesting opportunities for more sensitive species are limited by the general noise and lack of cover.

No wildlife species of conservation concern or significant or noteworthy habitat features have been recorded along this portion of the project limits, and their presence is considered unlikely given the disturbed and open character of the vegetation communities and its location adjacent to a busy highway. The highway noise and interference with calling activity would be expected to prevent use of the local meadow marsh habitat in the wetland pockets by species such as Red-winged Blackbird or common early breeding amphibians that might otherwise use these habitats.

Within the east-west 'Linkage Area' designated by the City, potential land-based wildlife movement is hindered by the general lack of cover, and at present, fragmented regularly by the major road crossings (e.g., Hurontario Street, Highway 403, Tomken Road, Dixie Road and Eastgate Parkway) and their interchanges with Highway 403.

Given the overall habitat characteristics and functions, the effect of the BRT and associated facilities on wildlife and habitat is anticipated to be minimal. Therefore, implementation of standard construction mitigation measures are adequate, including minimizing removal of remnant habitat areas, protecting retained habitat areas and consideration of replacing and supplementing cover; protecting any wildlife incidentally encountered during construction, activities, and clearing woody vegetation to avoid the breeding window of migratory birds (or otherwise protecting any nests identified in a nesting inventory conducted prior to construction).

#### **4.1.2.5 Species of Conservation Concern and Species at Risk**

The NHIC database (which uses the provincial S-rank system to designate 'rare' species [S1, S2, S3]), MNR Aurora District, CVC and TRCA, DFO Species at Risk (SAR) mapping, Environment Canada's SAR search tool (available at: <http://www.sararegistry.gc.ca/species>) and various monitoring and background reports were consulted for information on species of conservation concern within the project limits.

##### *Fish*

The *Distribution of Fish Species at Risk* map (DFO 2007b) indicates that the reaches of Little Etobicoke Creek (within the project limits) have a "high potential" for Redside Dace and Atlantic Salmon. However, it was confirmed with DFO that the "potential" mapped for these creeks pertains only to Redside Dace (Andrea Doherty Pers. Comm. July 31, 2008).

Redside Dace is designated as Threatened by the Committee on the Status of Species at Risk in Ontario (COSSARO) and its federal status has recently been elevated to Endangered by the Committee on the Status of Endangered Species in Canada (COSEWIC).

Redside Dace was last recorded in Little Etobicoke Creek, at Burnamthorpe Road (downstream of the project limits) in 1949 (NHIC). The Redside Dace Recovery Strategy indicates that Redside Dace has likely no longer present in the Etobicoke Creek Watershed. TRCA (Pers. Comm. Scott Smith, Tuesday July 29, 2008) confirms this point.

## *Flora*

There are no intact ‘natural areas’ associated with the Winston Churchill Boulevard interchange. The presence of species of conservation concern is therefore considered limited to the section of Hurontario Street and Eastgate Parkway.

Although not within the project limits, Butternut was the only flora SAR recorded within the Natural Areas Survey Update (City of Mississauga 2006) in the vicinity of the BRT alignment. This tree species is designated by COSEWIC as Endangered in Canada and it is listed on Schedule 1 of the SARA. It is also designated by MNR as Endangered, but is not regulated in Ontario (i.e., the Ontario Endangered Species Act does not apply). This species also has a provincial rarity rank of S3.

Based on a query of the Environment Canada SAR search tool, American Ginseng (*Panax quinquefolius*) is also indicated as potentially being present in a broader area that encompasses the project limits. American Ginseng typically grows in mature, undisturbed deciduous forests, typically near the bottom of south-facing slopes where soils are well-drained and warm. Forest canopy is usually dominated by Sugar Maple, White Ash, Bitternut Hickory, and Basswood. These habitat conditions do not occur within the project limits; the most likely candidate habitat would be intact areas along the Etobicoke Creek valley. However, it is not known whether this species persists even there, as it has not been identified in recent surveys conducted (TRCA 2004).

Of the 95 species recorded in the general vicinity of Hurontario Street and Renforth Drive by Ecoplans or during the City of Mississauga’s Natural Areas Survey Update (2006), 42 are regionally recognized as “species of special concern” by Peel Region and/or TRCA. The following summary comments are relevant:

- Of these 42 species, TRCA (2003) ranks one as L1 (Twinleaf), three as L2 (Toadflax, White Oak, Clinton Wood Fern), 17 as L3, and 19 as L4. One is considered no longer present within the TRCA’s jurisdiction (Harbinger-of-spring).
- Of the L2 to L4-ranked species, only White Oak was recorded along the project limits and its occurrence was associated with landscape plantings.
- Of the 42 species, Peel Region (Varga et al. 1999) has designated 15 as regionally rare: 13 as ‘rare’, one as ‘uncommon’, and one as ‘extirpated’ (some of these have overlapping L-ranks); and the City of Mississauga has identified 24 plant species as uncommon and 8 as rare (some of which overlap with the Regional list):
- The locations of the regionally and municipally rare species within the project limits are noted as follows:
  - RW1 – Sharp-lobed Hepatica (uncommon within the City), Squirrel-corn (rare within the City, uncommon within the Region) and Bellwort (uncommon within the City).
  - White Spruce – present throughout the project limits, however they are most likely planted or seeded in from residential and landscape plantings.
- The locations of the Regionally rare species in the immediate vicinity of the project limits is NE4 (well outside of the project limits and is separated from the project limits by NE4SMA) – Bristly Sedge, Canada Moonseed, Toadflax, Cleavers.

The remainder of these species are located well outside of the project limits. Although it is possible that some may occur within the project limits, none was noted during the field surveys and most would be associated with the forest habitats or less disturbed habitats.

## **4.2 Socio-Cultural Environment**

### **4.2.1 Archaeology and Heritage**

#### **4.2.1.1 Archaeology**

##### **Stage 1 Archaeological Assessment**

New Directions Archaeology Ltd. Was retained to undertake a Stage 1 Archaeological Assessment of the study area. The Archaeological Assessment was carried out with the objectives of identifying known archaeological sites and determining the archaeological potential of the study corridor.

The Stage 1 Archaeological Assessment involved a review of documents pertaining to the corridor including, but not limited to, historic maps. The Ontario Ministry of Culture was contacted for current information on registered archaeological sites and previous archaeological assessments undertaken in the vicinity of the study area.

Based on historic populations in the study area and the fact that the study area is located near early roadways suggest a fairly high probability of locating historic sites along the subject corridor.

A survey of the Ministry of Culture archaeological site registry database in Toronto revealed that there are no registered sites located within the Mississauga BRT corridor. There are, however, 32 registered sites within a two kilometre radius of the corridor. This is a fairly high frequency of archaeological sites near the study area.

Of the sites close to the Mississauga BRT corridor, there are nine historic Euro-Canadian sites and the remainder are prehistoric sites. Of the prehistoric sites for which the age was determined, there is one Late Archaic site, one Late Paleo-Indian site, one Early Woodland period site, one Late Woodland Iroquoian period site and two Late Woodland period village sites. The remaining 17 sites are simply identified as prehistoric because no culturally or temporally diagnostic artefacts were recovered. This is a fairly high frequency of archaeological sites near the study area.

A preliminary field assessment to examine the condition of this corridor was completed in 2007. It was found that the proposed corridor appears to be relatively undisturbed by previous construction activities (such as Highway 403 and the adjacent residential construction), nor does it appear to have been impacted by the adjacent residential construction or the hydro corridor.

##### **Stage 2 Archaeological Assessment**

Whereas Stage 1 Archaeological Assessment relies on published materials and an overview of the study area, Stage 2 is the initial field assessment of the study area. Given the historical use of the area and fallow condition of the corridor, it was determined that the majority of this corridor will require a Stage 2 Archaeological Assessment. A Stage 2 Archaeological Assessment will be required for the section at the Winston Churchill Boulevard

Interchange, the area on the north side of Eastgate Parkway from Tomken Road to east of Dixie Road and the area on the east side of Eastgate Parkway from Fieldgate Drive to Tahoe Boulevard. These areas requiring further assessment are noted on Figures 4-10 and 4-11. The figures do not include Winston Churchill Boulevard since the entire Winston Churchill area will be subject to a Stage 2 Archaeological Assessment.

Once plans of the preferred corridor are available, the Stage 2 assessment can begin. Stage 2 work is to be completed prior to busway construction. The Stage 2 assessment will determine whether there are any prehistoric or historic archaeological sites located within the high potential areas within the study area. The corridor will be assessed by either ploughing the surface and examining exposed materials, or using a test pit survey strategy whereby all topsoil from each 30 cm pit is sieved through ¼" mesh hardware cloth.

If artifacts are encountered, they are catalogued and analyzed to determine their cultural and temporal affiliation, as well as their archaeological and/or their historical significance. The Stage 2 report will include recommendations as to whether the findings are significant enough to warrant further archaeological assessment (Stage 3). Should any archaeological materials be found, all interested stakeholders (including identified First Nations) will be advised. The final report will be submitted to the Heritage Branch of the Ontario Ministry of Culture to obtain clearance and to fulfill licensing requirements. If the Stage 2 report documents archaeological finds, it should be noted that the archaeologist and the Ministry of Culture typically would not make the report available to the general public in order to protect archaeological sites from disturbance.

### **Stages 3 & 4 Archaeological Assessment**

If Stage 3 assessment is required, it must again be undertaken prior to construction in the affected area. Stage 3 focuses on determining the extent of the archaeological deposit by detailed field survey and hand excavation. If the deposit is deemed significant in size, temporal affiliation and cultural material recovered, Stage 4 work may be required. Stage 4 involves the total excavation of the archaeological site, and can only be avoided by establishing a permanent protected space around the site.

#### **4.2.1.2 Heritage**

There are no known built heritage resources displaced by the project. During the original Environmental Assessment and the 2004 EA Addendum no built heritage features were noted within the BRT corridors. The study area is generally represented by relatively contemporary buildings and new development.

#### **4.2.2 Noise**

A noise assessment of the BRT project was undertaken in 1991 as part of the provincial Environmental Assessment process and is documented in Appendix N of the Mississauga Transitway Environmental Assessment Report (City of Mississauga 1992). Although portions of the assessment were later updated during the Mississauga Transitway Environmental Assessment Addendum (City of Mississauga 2004), the updated material does not apply to the areas being considered under the current Addendum. The Conditions of Approval from the original EA were also not addressed in 2004.

The noise assessment was updated in 2008, with both field measurement of existing noise conditions and computer modelling of the busway's impact on noise at nearby noise sensitive properties. The material in this document related to the specific Addendum sites is drawn from the 2008 update (see Appendix C: Noise Analysis).

The applicable sound level criteria are based on the Ministry of the Environment (MOE), Ministry of Transportation (MTO), Region of Peel and City of Mississauga noise guidelines and policies for transportation and stationary sources of noise.

Numerous receptor locations were selected to represent typical properties within the study area. The Noise Receptors used in the areas that are the subject of this Addendum were:

- Winston Churchill Boulevard: Rw 7 (Residential)
- Hurontario Street: Re 22 (Commercial)
- Tomken Road: Re 14, Re 15 (Residential)
- Dixie Road: Re 11, Re 12 (Residential)
- Eastgate Parkway: Re 8, Re 9, Re 10 (Residential)

These locations are shown in Figure 4-12.

In accordance with MOE guidelines, calculations for the busway were based on an equivalent noise level (Leq) measured in decibels. The noise level is calculated over a 16 hour daytime descriptor (i.e. 0700-2300) and a Leq 8 hour nighttime descriptor (i.e. 2300-0700). Calculations for the stations were based on a Leq 1 hour descriptor for day (i.e. 0700 – 1000), evening (i.e. 1900 – 2000) and night (i.e. 0600-0700). The day, evening and night hours used for noise assessment were selected to represent the peak (i.e. worst-case) operational hours for the stations.

Receptor	16 hour (daytime) Leq Noise Level (dBA)			Impact of EA Addendum Plan
	Existing	Future with Approved Plan	Future Proposed (Revised) Plan	
Winston Churchill Boulevard Site				
Rw7	58.4	60.0	59.7	-0.3 (negligible)
Hurontario Street Site				
Re22 (Commercial)	72.1	74.2	75.0	+0.8 (insignificant)
Tomken Road Site				
Re14	53.6	55.5	56.2	+0.7 (insignificant)
Re15	52.9	56.6	54.1	- 2.5 (beneficial)
Dixie Road Site				
Re11	54.2	58.8	58.7	-0.1 (negligible)
Re12	54.5	56.0	56.0	0
Eastgate Parkway Site				
Re8	55.7	53.4	52.2	-1.2 (negligible)
Re9	53.9	55.7	56.7	+1.0 (insignificant)
Re10	54.4	56.2	56.5	+0.3 (negligible)

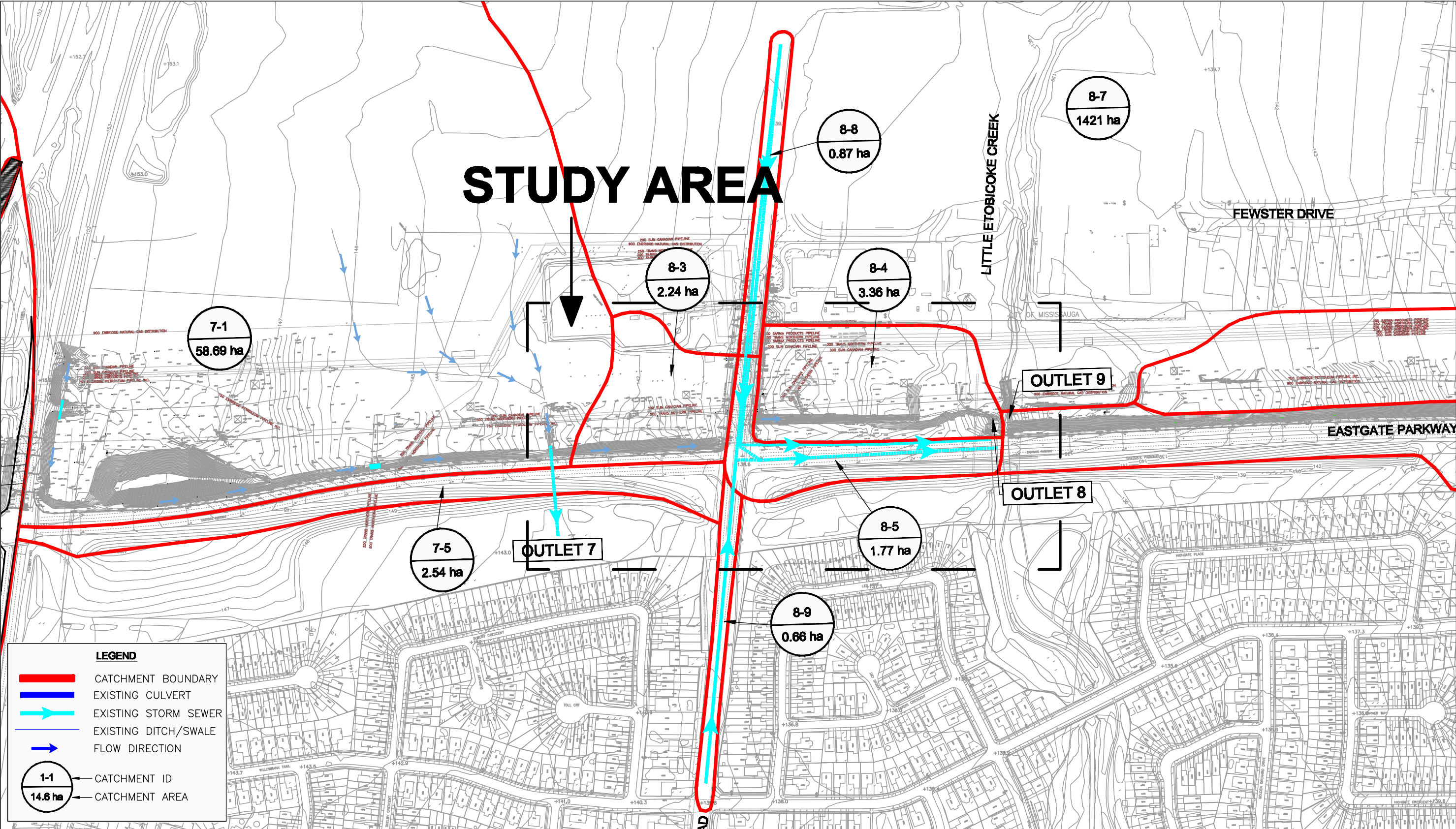
The difference in future noise levels between the previously approved plan/profile and

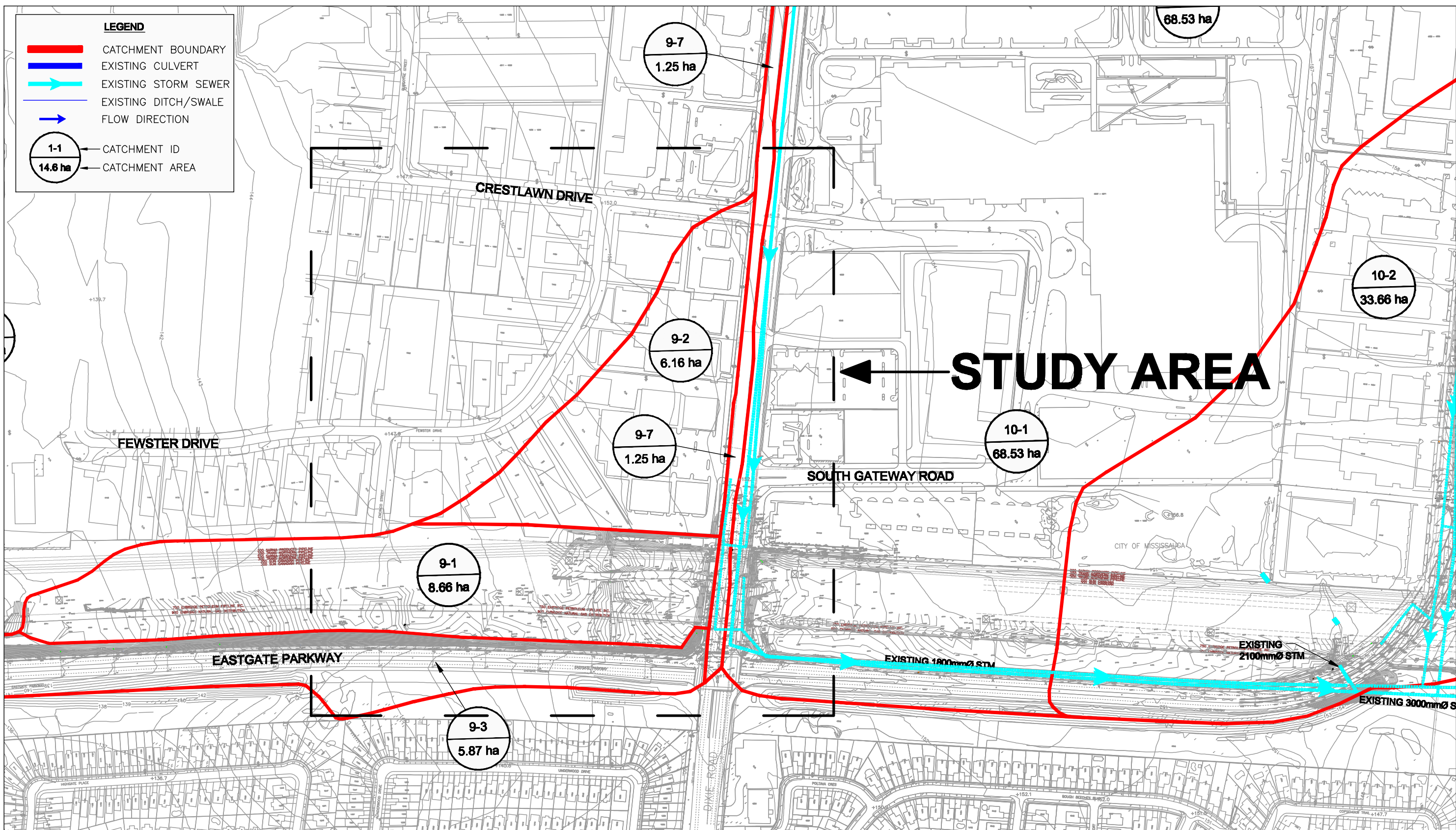
the proposed revised plan/profile is seen to be less than 2 dBA. Even the difference between the proposed plan/profile and existing daytime figures is less than the 5 dBA threshold at which noise mitigation measures should be considered. This result confirms that the proposed revisions to the EA approval will not result in an acoustically significant impact on nearby residential properties.




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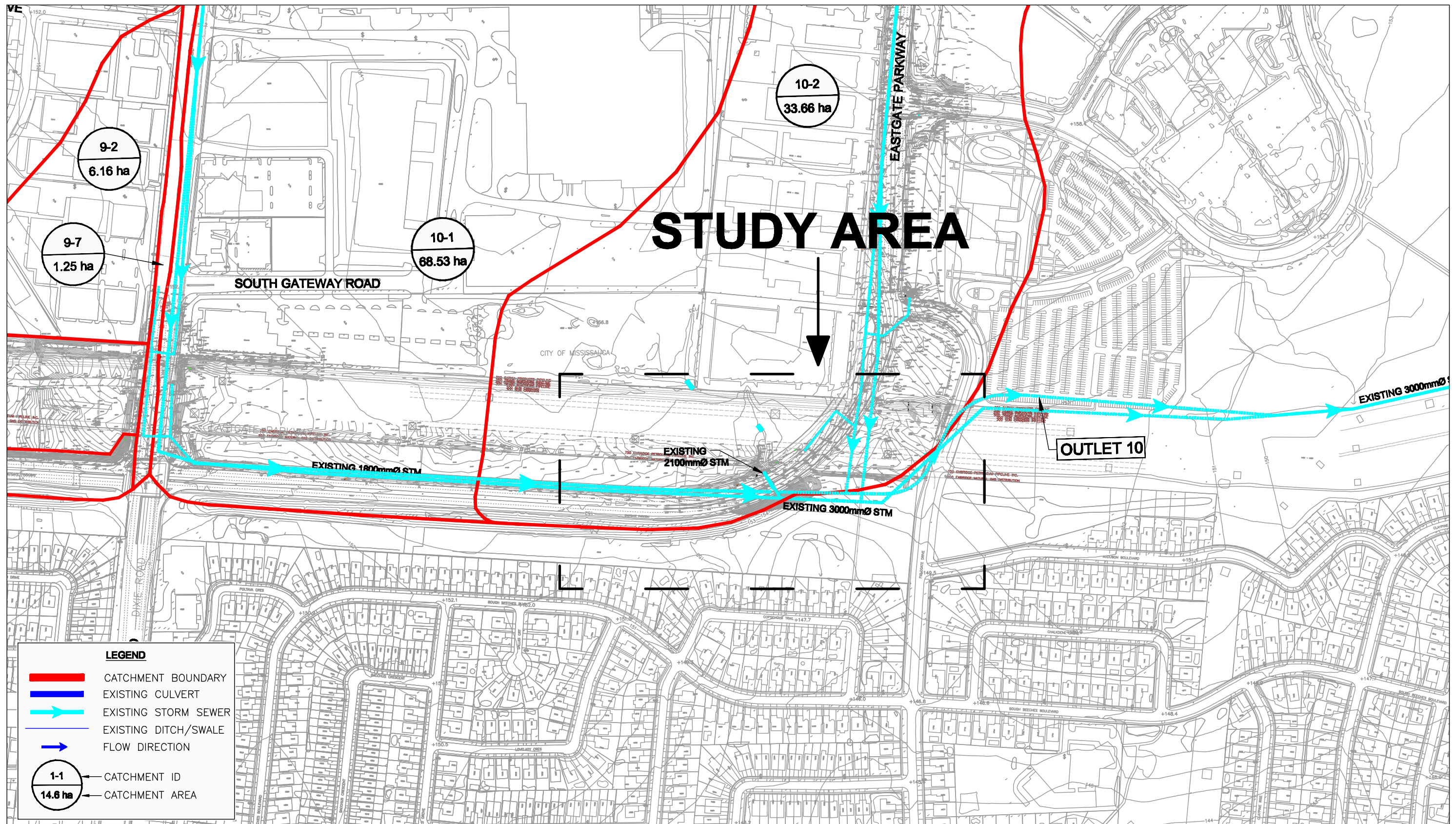








	 <b>McCORMICK RANKIN CORPORATION</b>	 	<b>DATE</b> August 2008  <b>SCALE</b> 1:4,000	<b>MISSISSAUGA BRT PROJECT ENVIRONMENTAL ASSESSMENT ADDENDUM</b>  <b>DIXIE ROAD / EASTGATE PARKWAY EXISTING DRAINAGE AND STORMWATER MANAGEMENT</b>	<b>FIGURE 4-4</b>
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Legend

- Permanent Stream (OBM)
- Ecoplans ELC Communities
  - FOD5-3: Sugar Maple - Hickroy Deciduous Forest
  - CUM1-1: Cultural Meadow/Old Field (Prevalent vegetation community unless otherwise marked.)
  - CUW: Cultural Woodland
  - MAM2-2: Reed Canary Grass - Mineral Meadow Marsh
  - MAS2-1: Cattail Mineral Meadow Marsh



McCormick Rankin  
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MISSISSAUGA  
Transportation and Works



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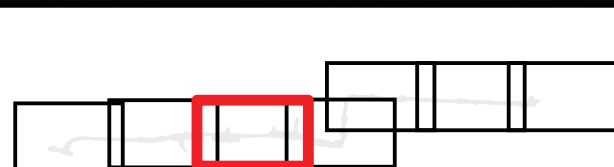
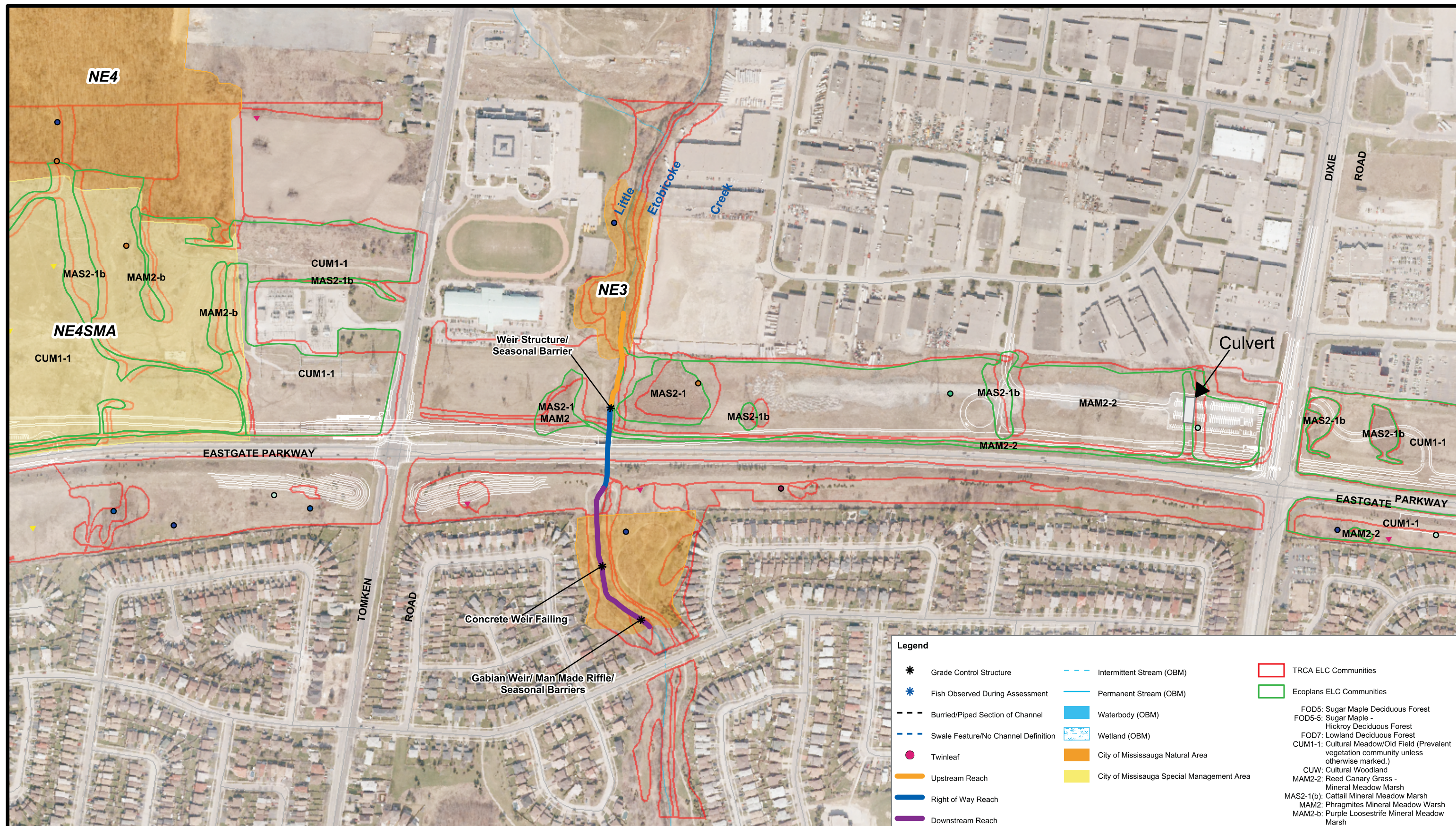
MISSISSAUGA BRT PROJECT  
ENVIRONMENTAL ASSESSMENT ADDENDUM

Natural Environment Features  
Winston Churchill Site

FIGURE

4-6





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Transportation and Works



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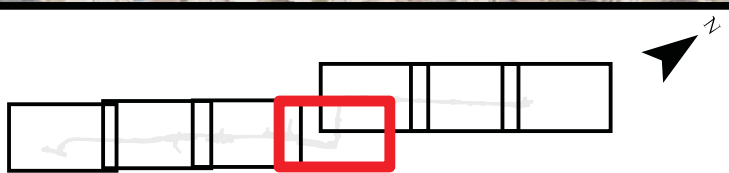
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MISSISSAUGA BRT PROJECT  
ENVIRONMENTAL ASSESSMENT ADDENDUM

**Natural Environment Features**  
Tomken and Dixie Sites

FIGURE

**4-8**

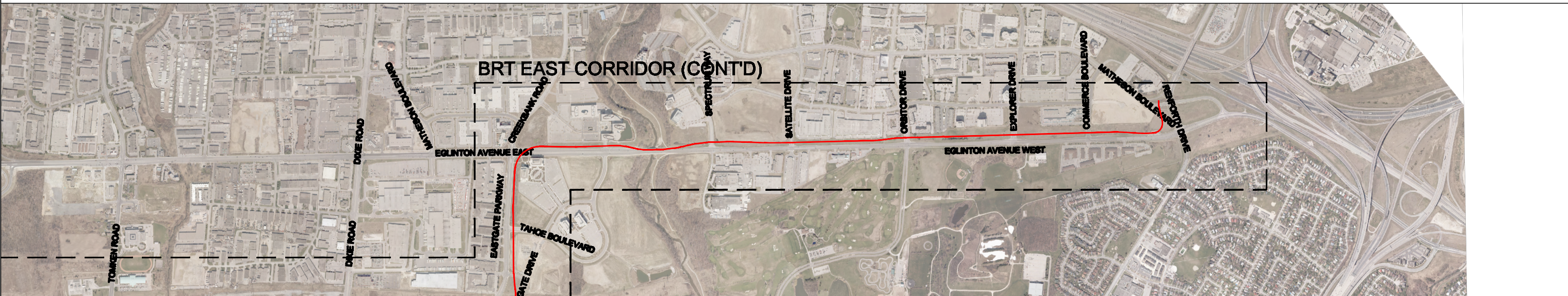
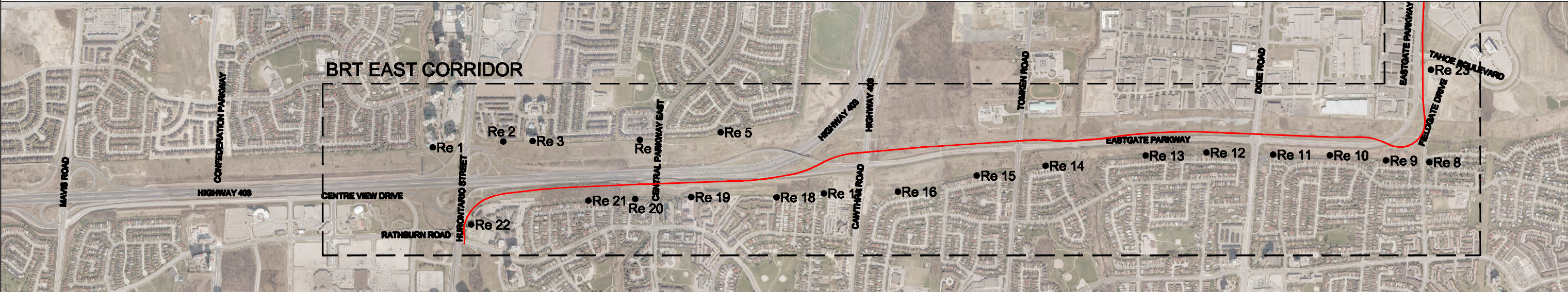
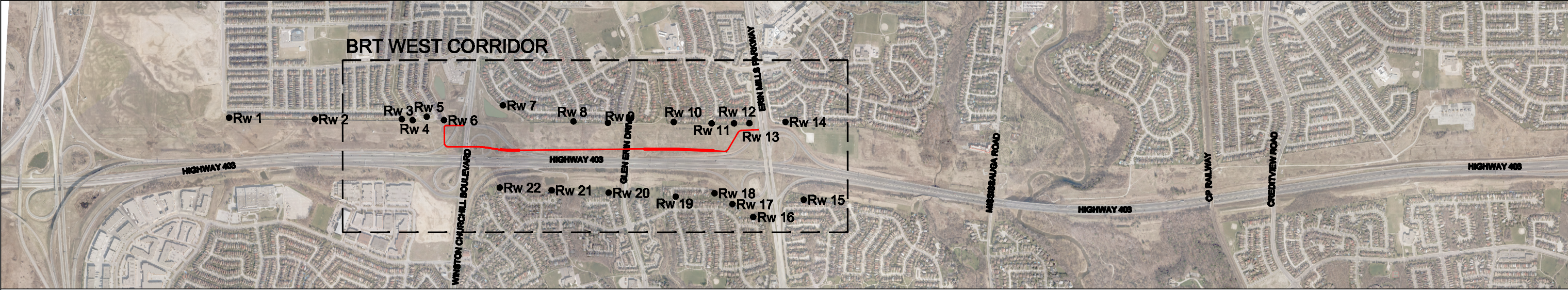




<b>McCORMICK RANKIN CORPORATION</b>	
DESIGN BY	APPROVED BY
E.E.F.	
DEPARTMENTAL APPROVAL	
W. SCOTT ANDERSON	PENL
<b>MISSISSAUGA</b> Leading today for tomorrow PROJECTS FOR THE ENGINEERS AND WORKS PROPOSED MISSISSAUGA BUSWAY	
SCALE	REV. TYPE
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DATE: NOV. 21, 2007	SHEET 1 OF 1
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<b>McCORMICK RANKIN CORPORATION</b>			
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<p>● Rw # / Re # - Noise Receiver Location</p> <p>— BRT Alignment</p>	<p><b>MRC</b> McCORMICK RANKIN CORPORATION</p>	<p><b>MISSISSAUGA</b> Transportation and Works</p> <p><b>Transit</b></p>	<p>DATE: April, 2009</p> <p>SCALE: 1:20,000</p>	<p><b>MISSISSAUGA BRT</b> <b>PRELIMINARY DESIGN STUDY</b></p> <p>NOISE RECEPTOR LOCATIONS</p>	<p><b>FIGURE</b> <b>4-12</b></p>
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## **5. WINSTON CHURCHILL BOULEVARD INTERCHANGE**

### **5.1 Need & Justification / Rationale**

#### **5.1.1 Current BRT Plan**

The EA (Addendum) approved BRT plan has the busway passing under the S-W and E-N/S Highway 403 ramps at the Winston Churchill interchange. The profile has been optimized (maximum grades, minimum vertical curves) in order to minimize or avoid utility impacts where possible.

#### **5.1.2 Outstanding Issues**

The concerns that arise with the approved BRT profile are:

- A sump is created under the S-W loop ramp that is too deep to be drained by gravity and would require a pumping station (\$2.5M capital cost plus ongoing maintenance cost)
- The busway is likely to intercept several major utilities:
  - Twin 2.4 m diameter storm sewers, running from the Stormwater Management Pond on the north side of the corridor southward across Highway 403
  - A major sanitary sewer, located immediately west of the storm sewers
  - 300 mm and 200 mm Sarnia Products pipelines, which cross over the storm sewers at approximately the same location as the busway
  - 300 mm and 200 mm Sun Canadian oil pipelines, parallel to and slightly to the west of the Sarnia Products pipelines

The cost of relocating each pipeline is conservatively estimated as \$1 M - \$2 M, and the duration and staging of such work would be a concern

- Both highway ramps will need detours constructed to a high standard

The total cost premium (over the basic roadway cost) of this segment may be in the \$8 - \$10M range.

### **5.2 Alternatives**

It is not physically possible to increase the elevation of the S-W and E-N/W ramps to the extent that would allow the busway to pass under them and eliminate the need for a pumping station. The proposed alternative at this location is to have the busway cross over the S-W and E-N/S ramps, thereby eliminating the drainage problem, eliminating the need for a pumping station, avoiding the pipelines, and avoiding the need to detour the ramps during structure construction, and hence reduce cost substantially.

Since the existing S-W loop ramp cannot be lowered substantially (due to the pipelines it crosses just north of the busway and the sump that would be created before Winston Churchill Boulevard), either the busway profile would be set to go under Winston Churchill and over the loop ramp using maximum design criteria, or the loop ramp could be expanded so as to shift the busway crossing point approximately 30 m east. Enlarging the loop ramp would allow the structure to be built without disrupting the existing ramp, but it would entail reconstructing the full lengths of both the S-W ramp and the E-N/S

ramp in order to avoid the hydro tower situated between the two (noting that it is not feasible or cost-effective to move the tower).

### 5.3 Evaluation / Analysis

There are three alternatives to consider: busway under two ramps; busway over two ramps; and busway over two ramps with a shifted S-W loop ramp.

**Table 5-1: Analysis of Alternatives for the Winston Churchill Interchange**

Analysis Factor	Busway Under (Base Case Alternative)	Busway Over – Existing Ramps	Busway Over – Relocated Ramps
Cost	Utilities \$10.9 M Structures \$1.9 M Walls \$1.0 M Roadworks: \$0.6 M Excavation: \$1.0 M Traffic Mgmt \$0.5 M Subtotal \$15.9 M	Utilities \$2.3 M Structures \$2.1 M Walls \$1.0 M Roadworks \$0.6 M Fill: \$0.4 M Traffic Mgmt \$0.5 M Subtotal \$6.9M	Utilities \$2.3 M Structures \$2.1 M Walls \$0.5 M Roadworks \$1.2 M Fill: \$0.3 M Traffic Mgmt \$0.2 M Subtotal \$6.6 M
Utilities	Retaining wall needed to project parallel pipelines	Retaining wall needed to avoid parallel pipelines; lowered S-W ramp may impact two pipelines	Retaining wall needed to avoid parallel pipelines
Drainage	Pumping station required at loop ramp sump.	Gravity drainage to existing ditches.	Gravity drainage to existing ditches.
Construction Disruption	Detours and two-stage structure construction required for both ramps	Both structures require temporary ramp closures for girder placement. Ramp lowering in situ requires major detours for both.	S-W structure can be built off line; E-N/S girder structure requires temporary closure; ramp reconfiguration requires traffic restrictions
Environmental Assessment	Falls under previous approval. No change or impact.	Profile change triggers EA Addendum	Profile change triggers EA Addendum
Ramp Geometry	Existing: S-W loop ramp 52 m radius; E-N/S ramp radius 240m / 100m	Existing: S-W loop ramp 52 m radius; E-N/S ramp radius 240m / 100m	S-W loop ramp 65 m radius (increased); E-N/S ramp radius 240m / 90m (reduced)
Community Impact	Visual: No significant impact Noise: no change in the noise levels identified in the EA report.	Visual: busway embankment will be visible from north side residences; apply landscaping plan to north side of embankment (see Fig. 5-6) Noise: busway embankment reduces 403 traffic noise	Visual: busway embankment will be visible from north side residences (1 m lower than option #2); apply landscaping plan to north side of embankment (see Fig. 5-6) Noise: busway embankment reduces 403 traffic noise

### 5.4 Conclusions / Recommendations

The alternative of crossing over the ramps is significantly less costly than going under. The impacts of these options on the community are both minor and mitigatable. Of the two “over” options, the one involving a realigned S-W loop ramp is less costly and

incrementally better in most respects. The recommended alternative is shown on Figure 5-3.

## 5.5 Environmental Effects and Commitments to Mitigation

The following section discusses environmental effects and commitments to mitigation only as they differ from those previously identified in the 1991 Environmental Assessment and the 2005 Environmental Assessment Addendum for the Mississauga Transitway.

### 5.5.1 Physical Environment

#### 5.5.1.1 Roads

The busway in this section crosses (and is grade separated at) all interchange ramps on the north side of Highway 403, as well as at Winston Churchill Boulevard. The construction of a structure at each crossing will, in almost all cases, be disruptive to traffic operations. Table 5-2 provides details regarding construction staging and anticipated traffic effects. Traffic operation effects will be minimized by leaving an adequate amount of road capacity open at all times through the use of staged construction. Capacity reduction will not be scheduled simultaneously on parallel adjacent roads.

The construction of structures will have a localized disruptive effect on roadway traffic, as will the reconfiguration of the north parts of the Winston Churchill interchange with Highway 403. These effects will be mitigated through conventional traffic management programs that maintain a level of traffic capacity and safety acceptable to the respective road authorities (Ministry of Transportation of Ontario, Regional Municipality of Peel, City of Mississauga and City of Toronto). Detours, lane closures, temporary / overnight closures, special signals, lane markings, and signage will be used as appropriate. The motoring public will be advised of planned activities that may result in traffic disruption in advance (both temporally and physically). Bicycle and pedestrian access along roads (where pre-existing) will be maintained at all times. These mitigation measures should reduce impacts to a level acceptable to authorities and the public.

**Table 5-2: Summary of Road Crossing Construction Staging and Anticipated Traffic Effects**

Road Crossing	Construction Staging	Anticipated Traffic Effect
Winston Churchill N-W Ramp	Off line	Brief ramp closure to reconnect with realigned ramp
Winston Churchill Blvd	Three stages	Two through lanes in each direction maintained at all peak periods
Winston Churchill S-W Ramp	Off line	Brief ramp closure to reconnect with realigned ramp
Winston Churchill E-N/S Ramp	Busway over ramp	Brief ramp closure during placement of girders

In all the above situations, the adjacent or affected traffic signals will be re-timed as appropriate to accommodate the modified traffic patterns during the construction period. The duration of each disruption or lane closure will vary, but at most will occur over a single construction season (April – November).

The Winston Churchill interchange with Highway 403 will also encounter traffic effects associated with the relocation of the N-W ramp, the realignment of the E-N/S ramp and the introduction of a fourth (westerly) approach to the E-N/S ramp terminal. A program of traffic management that maintains capacity and safety will be developed in the Detail Design process.

In addition to the disruption associated with the above noted structure construction, corridor roads will be used by construction equipment, temporary construction access points will be implemented, and a substantial amount of truck traffic will be associated with the disposal of excess fill.

Most construction will, however, take place within the BRT right-of-way and will not impinge on or affect traffic operations on the adjacent or nearby roads. Standard contract measures will be implemented to ensure that mud and debris is not tracked by construction equipment onto travelled roads.

#### *Operation and Maintenance Effects*

Once the BRT facility is in operation, there should be no special ongoing operational or maintenance effects on the road system or general traffic operations. The new structures will be added to the inventory of road structures in Mississauga and will follow conventional inspection, maintenance and rehabilitation schedules.

#### *Significance*

The construction of the busway structures will have a localized disruptive effect on roadway traffic. With the implementation of the above noted mitigation measures potential for adverse effects can be minimized and no significant residual effects should occur.

### **5.5.1.2 Utilities Within / Crossing Corridor**

The presence of utilities is a guiding and constraining factor in the design and construction of the BRT project. The plans, profiles, structures, walls, and roadworks have all been adjusted during Preliminary Design in order to minimize effects on existing utilities, both permanently and through the construction period.

The utilities within the EA Addendum study area on the east side of the Winston Churchill interchange are:

#### *Pipelines*

- The busway crosses Sarnia Products and Sun Canadian pipelines (total 4 pipes) to the east of the E-N/S exit ramp from westbound Highway 403 to Winston Churchill Boulevard. At that point, the recommended profile for the busway is at or above grade, and there is no pipeline relocation required; as a consequence, there are no National Energy Board (NEB) permits required. The detail design of the crossing will be submitted to pipeline owners for their technical review and agreement. Pipeline owners will provide inspectors on site during construction in the vicinity of their facilities.

### *Other Utilities – Winston Churchill Boulevard Interchange*

The busway in this section will affect the following utilities:

- Rogers Cable
  - buried fibre optic cable line along the east edge of Winston Churchill Boulevard: temporary realignment; replace after bridge construction
  - aerial fibre optic cable running north-south 175 m east of Winston Churchill Boulevard: drop into buried conduit under raised busway
- Bell Canada: Buried cable along Winston Churchill Boulevard: temporary realignment; replace after busway construction;
- Hydro One: two 230kV overhead power lines (east-west) north of Highway 403 in the utility corridor; provide adequate offset from towers
- Enersource (Hydro Mississauga): both buried and aerial hydro facilities at the Winston Churchill Boulevard site: temporary realignment; replace after busway construction;
- Ministry of Transportation of Ontario: High Mast Light standards at varying intervals (100 m – 250 m), approximately 25 m north of the edge of pavement of Highway 403: relocate four light standards at Winston Churchill interchange (slight shift only, to avoid BRT infrastructure); relocate associated buried power supply ducts.

### *Construction Effects*

The process of revising, relocating, or reconstructing utilities will be designed and managed by the respective utility owner, to reflect the BRT design requirements at the Detail Design stage.

Utility relocation will generally be the first step in clearing a zone for construction; aerial lines (such as Rogers and Enersource) are normally the first utilities to be shifted, followed by buried pipes. Where possible, utilities will be relocated to their ultimate position, to avoid multiple shifts during the construction period. Multiple utility contractors will not be permitted to work at the same site simultaneously; the sequencing and timing of their work will be carefully scheduled to avoid conflicts.

### *Operation and Maintenance Effects*

The following discussion applies to all utility-related impacts discussed in Sections 5.5.1.2, 6.5.1.2, 7.5.1.2, 8.5.1.2, and 9.5.1.2.

The BRT project will alter the utility owners' access to their infrastructure in the corridor. For the most part, the addition of a new roadway (with full shoulders to allow parking of service vehicles without impeding bus operations) will improve access to utilities along or crossing the busway. Utility agencies will obtain authorization before moving onto the busway. Busway and station infrastructure has been designed, where possible, to physically avoid buried utilities and to allow for access (including digging) along the entire length of existing buried plant without interfering with ongoing busway operations. Activities and access will be restricted to those which do not interfere with ongoing BRT operations and safety. Some utility maintenance work will be limited to overnight (when

the busway is not in operation) or off-peak hours when there is less risk of effect on bus operations. Utility access from surrounding roads and crossing streets will be maintained as well.

The busway may restrict the timing or design of some particular maintenance practices, while it provides improved access to much of the corridor. In the event of utility maintenance or repair requiring closure or severe operating restrictions on a segment of busway or station, the BRT operator will work with the utility agency to minimize the disruption. If necessary, buses can be diverted off the busway to operate on the road network on a temporary basis.

Detailed protocols will be developed between the BRT operator and each utility to govern the practices and processes that will need to be followed to meet the functional requirements of each party. These protocols, while Mississauga-specific, will be able to draw on similar effective agreements that have been established for other similar facilities.

### *Significance*

The construction of the BRT facility, while requiring some utility relocation, is not anticipated to result in any significant adverse effects to the utilities. The presence of the BRT facility is not expected to represent a significant adverse effect on the ability of utility owners / operators in the corridor to carry out their regular operations and maintenance programs. With the implementation of the above noted mitigation measures potential for adverse effects can be minimized and no significant residual effects should occur.

## **5.5.2 Natural Environment**

### **5.5.2.1 Watercourse Crossings**

There are no watercourse crossings in the study area.

### **5.5.2.2 Vegetation, Wetlands, and Wildlife**

While the BRT facilities and associated changes in the Highway 403 interchange ramps for access to the BRT facilities result in permanent removal of cultural meadow and associated meadow habitat, the effect is limited given the common, tolerant nature of the vegetation communities. The incremental removal of this vegetation on a local scale given the urbanized nature of the landscape generally is noted; however, specific efforts to replace this community are not warranted given its characteristics and the urban setting.

These effects are not considered significantly different from those incurred under the previously approved alignment.

### **5.5.2.3 Species of Conservation Concern and Species at Risk**

The proposed changes to the approved plan / profile will not have any effect on species of concern / risk.

#### **5.5.2.4 Stormwater Management**

##### *Potential Construction Effects*

The following provides an overview of the hydraulic and stormwater management criteria for this project. Standard measures to prevent erosion and sedimentation will be implemented during construction. The Credit Valley Conservation Authority (CVC) will be consulted with as necessary during Detail Design regarding the placement of fill and any associated requirements for permits.

##### Hydraulic Criteria

The drainage system for the Mississauga BRT will be designed based on the *MTO Highway Drainage Design Standards* (MTO 2008) for a freeway. As such, the design criteria for the Preliminary Design are as follows:

- Minor system to be designed for the 10 year event;
- Major system to be designed for the 100 year event;
- Either an overland flow route (swale, ditch or realigned watercourse) or a storm sewer shall convey external runoff from the point of interception to the receiving watercourse. The capacity of this flow route shall be sufficient to convey the major system design flow; and
- Minimum culvert sizes are as follows:
  - 800 mm minimum diameter for circular culverts
  - 800 mm minimum rise for elliptical or arch culverts
  - 900 mm minimum rise for box culverts.

The criteria identified above allow for the preliminary design of conveyance systems within and external to the BRT and preliminary sizing of stormwater management measures. At the Detail Design stage, additional criteria/standards identified within the *MTO Highway Drainage Design Standards* (MTO 2008) will be applied to complete the detailed design of the drainage system including but not limited to: storm sewer sizing, catchbasin spacing, bridge deck drainage, sag and spread analyses, and ditch and culvert sizing. The minimum major culvert sizes will be re-evaluated for 100-year design flow from the respective catchment areas on the basis of final hardscape and morphology during the detail design of the structures.

##### Stormwater Management Criteria

In consultation with CVC, City of Mississauga, MTO, and available documentation, design criteria for the stormwater management strategy have been established. These criteria include:

- Provision of post-to-pre water quantity control for the 2 year to 100 year storm events for all runoff discharged to the Highway 403 drainage system, municipal sewers, Cooksville Creek and Little Etobicoke Creek; and
- Provision of Enhanced water quality control (i.e., 80% long-term removal of suspended solids), as identified in Table 3.2 of the MOE Stormwater Management Planning and Design Manual (MOE 2003), for runoff from all new development;

Provision for enhanced level of stormwater quality treatment shall be re-evaluated with the use of SWM BMP elements for all the existing / established and future catchment areas of the BRT project during the final stage of the detail design, per MOE requirements.

#### *Stormwater Management Plan*

Following is a brief description of the stormwater management plan for the project.

The stormwater management plan at Winston Churchill Boulevard relies on the existing outlets, which is twin 1200 mm diameter pipes (Outlet 1A) and twin 2590 mm diameter trunk sewer (Outlet 1B). The same outlets will be utilized under proposed drainage conditions and the existing drainage regime will not be greatly altered under proposed conditions. Existing peak flow rates at each outlet will not be exceeded under proposed conditions. Enhanced water quality control will be provided for all new development.

Construction of the BRT at this location will require installation of 6 new culverts and relocation of several ditches to maintain existing drainage across the BRT and the Highway 403 interchange at Winston Churchill Boulevard.

The design will include:

- on-site controls such as parking lot storage, to minimize the land requirement of stormwater management facilities;
- oil grit separators used in combination with flat bottom grass swales to provide a treatment train and ensure that Enhanced water quality control is provided;
- at the Detail Design stage, catchbasin spacing and storm sewer sizing designed in accordance with the MTO Highway Drainage Design Standards; and
- sizing of each of the proposed new culverts will be re-examined at the final design stage as parking lot grading may require that additional flow be directed to some of them.

Water quantity control for the BRT corridor and its associated parking areas and stations will be provided by a combination of pipe, ditch, pond and parking lot storage. Water quality control for the BRT corridor and its associated parking areas and stations will be provided by a combination of stormwater management basins, flat bottom grass swales and oil and grit separators.

#### *Potential Operation and Maintenance Effects*

It is critical that the system perform as designed and in a reliable, consistent manner. The City of Mississauga has vast experience in managing and operating stormwater management systems, and the BRT-related improvements will be absorbed within the overall municipal program. The management of the construction process and the addition of new or revised system elements will focus on avoiding disruption to the existing system, again using experienced contractors, working closely with the CVC (or, east of Cawthra Road, the Toronto Region Conservation Authority, or TRCA) and local property owners (e.g. MTO).

Once the BRT facility is operational, there should be no special ongoing operational or

maintenance effects on the stormwater management / drainage system. The new culverts, pipes, and expanded ponds / ditches will be added to the inventory of such structures in Mississauga and will follow conventional inspection, maintenance and rehabilitation schedules.

### *Significance*

The stormwater management and drainage system for the Mississauga BRT project is notable, not only for the busway itself, but for all the roads and properties within the catchment area. Revisions to the existing system afford the opportunity to enhance its performance and bring it up-to-date using current standards.

The proposed drainage plan for this section of busway is illustrated in Figure 5-5.

#### **5.5.2.5 Groundwater**

The proposed change in busway profile will have the effect of reducing or eliminating the groundwater issues associated with the previously approved alignment.

#### **5.5.3 Socio-Cultural Environment**

##### **5.5.3.1 Archaeology**

As noted in Section 4.2.1.1, a Stage 1 Archaeological Assessment of the corridor has been undertaken. The purpose of this investigation was to identify areas of archaeological concern and identify any additional archaeological assessments that will be required prior to construction. Given the historical use of the area and fallow condition of the corridor, it was determined that the majority of the corridor will require a Stage 2 Archaeological Assessment. However, all of the areas of proposed changes are previously disturbed.

The following outlines the proposed mitigation and commitments to future work required to mitigate potential adverse environmental effects to archaeological resources, applicable to all sites of proposed change to the EA approved alignment:

- Undertake a Stage 2 Archaeological Assessment for works in the identified undisturbed areas. If archaeological finds are discovered, Stage 3-4 mitigation will be undertaken as required in accordance with the guidelines and policies of the Ministry of Culture. Consultation will occur with the Ministry of Culture and, if applicable, potentially interested First Nations to discussion mitigation strategies if sites are found as part of the Stage 2 Assessments. Copies of the Stage 2 Archaeological Assessments will be provided to the Responsible Authorities. If the Stage 2 report documents archaeological finds, the archaeologist and the Ministry of Culture typically would not make the report available to the general public, in order to protect archaeological sites from disturbance.
- Submit any additional Archaeological Assessments a minimum of 90 days prior to construction to the Ministry of Culture.
- Should buried archaeological deposits be found along any section of the corridor during construction activities, the Ministry of Culture and any First Nations who have an interest will be notified immediately.

- In the event that human remains are encountered during construction activities the Ministry of Culture, the Registrar or Deputy Registrar of the Cemeteries Regulation Unit of the Ministry of Consumer and Commercial Relations, the Peel Regional Police and any First Nations who have an interest will be notified immediately.

### *Significance*

The potential for archaeological finds in areas of construction exists at some relatively undisturbed sites. With the implementation of the above mitigation measures potential for adverse effects can be minimized and no significant residual effects should occur.

#### **5.5.3.2 Heritage**

Compared to the approved plan, no additional adverse environmental effects to heritage resources are anticipated during this phase of the project.

#### **5.5.3.3 Noise**

An updated noise analysis for the Winston Churchill Boulevard interchange was carried out by specialist subconsultants S.S. Wilson and Associates.

Daytime sound levels at other residential properties on either side of the corridor (see Appendix E for specific locations), calculated on the basis of current traffic levels and topography, show figures largely in the 55 – 60 dBA range:

<b>Receptor Code</b>	<b>Street</b> (see map, Appendix E, for specific property)	<b>Existing Daytime Sound Levels (dBA)</b>
Rw1	Angel Pass Drive	58.9
Rw2		59.5
Rw3		59.3
Rw4	Columbo Crescent	58.9
Rw5		53.9
Rw6		59.0
Rw7	Ambercroft Trail	58.4
Rw8	Romfield Crescent	59.6
Rw9		60.0
Rw10	Idlewilde Crescent	60.5
Rw11	Radisson Crescent	60.3
Rw12		59.4
Rw13		65.9
Rw14	Haydock Park	58.5
Rw15	Sawmill Valley Dr.	58.4
Rw16	Trellis Crescent	60.0
Rw17	Folkway Drive	58.8
Rw18	Treetop Court	57.8
Rw19		50.0
Rw20	Thom Gardens	56.2
Rw21	Remea Court	59.4
Rw22		60.7

These levels are in many cases above the provincial objective of 55 dBA, reflecting the noise generated by traffic on Highway 403 and the major arterials in the corridor.

The noise analysis update conducted in June 2008 confirmed that the BRT project does not increase sound levels at residential properties in the corridor to a significant extent; the project does not meet the provincial criteria for mitigation (an increase of more than 5 dBA, or a noise level of > 65 dBA). The noise analysis is included in Appendix D, and summarized in the table below. It reflects the proposed plan and profile as presented to the public (i.e. busway over the S-W and E-N/S ramps at Winston Churchill).

**Table 5-3: Updated Noise Analysis – Winston Churchill Boulevard**

Receptor Code	Street (see map in Appendix E for specific property)	Existing Sound Levels (dBA)	Future Sound Levels with BRT (dBA)	Change in Sound Levels due to BRT Project (dBA)	Significance* of the Change due to the BRT Project	Noise Mitigation **
North of Hydro Corridor						
Rw1	Angel Pass Dr.	58.9	59.9	1.0	Insignificant	Not required
Rw2		59.5	60.8	1.3	Insignificant	Not required
Rw3		59.3	60.9	1.6	Insignificant	Not required
Rw4	Columbo Cres.	58.9	60.5	1.6	Insignificant	Not required
Rw5		53.9	56.1	2.2	Insignificant	Not required
Rw6		59.0	60.6	1.6	Insignificant	Not required
Rw7	Ambercroft Trail	58.4	59.7	1.3	Insignificant	Not required
Rw8	Romfield Cres.	59.6	61.2	1.6	Insignificant	Not required
Rw9		60.0	61.3	1.3	Insignificant	Not required
Rw10	Idlewilde Cres.	60.5	62.2	1.7	Insignificant	Not required
Rw11	Radisson Cres.	60.3	63.5	3.2	Noticeable	Not required
Rw12		59.4	61.6	2.2	Insignificant	Not required
Rw13		65.9	67.5	1.6	Insignificant	Not required
Rw14	Haydock Park	58.5	61.1	2.6	Insignificant	Not required
South of Highway 403						
Rw15	Sawmill Valley Dr.	58.4	59.5	1.1	Insignificant	Not required
Rw16	Trellis Cr.	60.0	61.7	1.7	Insignificant	Not required
Rw17	Folkway Dr.	58.8	59.5	0.7	Insignificant	Not required
Rw18	Treetop Ct.	57.8	58.9	1.1	Insignificant	Not required
Rw19		50.0	51.1	1.1	Insignificant	Not required
Rw20	Thom Gardens	56.2	57.6	1.4	Insignificant	Not required
Rw21	Remea Ct.	59.4	60.7	1.3	Insignificant	Not required
Rw22		60.7	62.0	1.3	Insignificant	Not required
* Impact Assessment Rating :			< 3 dB change : Insignificant >3 to < 5 dB change : Noticeable > 5 to < 10 dB change: Significant > 10 dB change : Very Significant			
** Criteria for mitigation:			>5 dB change			

The impact of the proposed change to the plan and profile east of Winston Churchill Boulevard on residential noise levels is best represented by site Rw7, which lies immediately north of the subject area. The noise analysis was re-done with the new plan and profile and found that the noise level would be 59.9 dBA, an increase of 0.2 dBA over the predicted noise level with the EA-approved (below-grade) plan and an increase of 1.5 dBA over existing conditions. The proposed revision to the plan and profile are therefore concluded to have a negligible impact on noise levels and are consistent with the previously-approved plan in that respect.

The proposed busway plan / profile revisions east of Winston Churchill Boulevard do not affect noise levels at any other receptor.

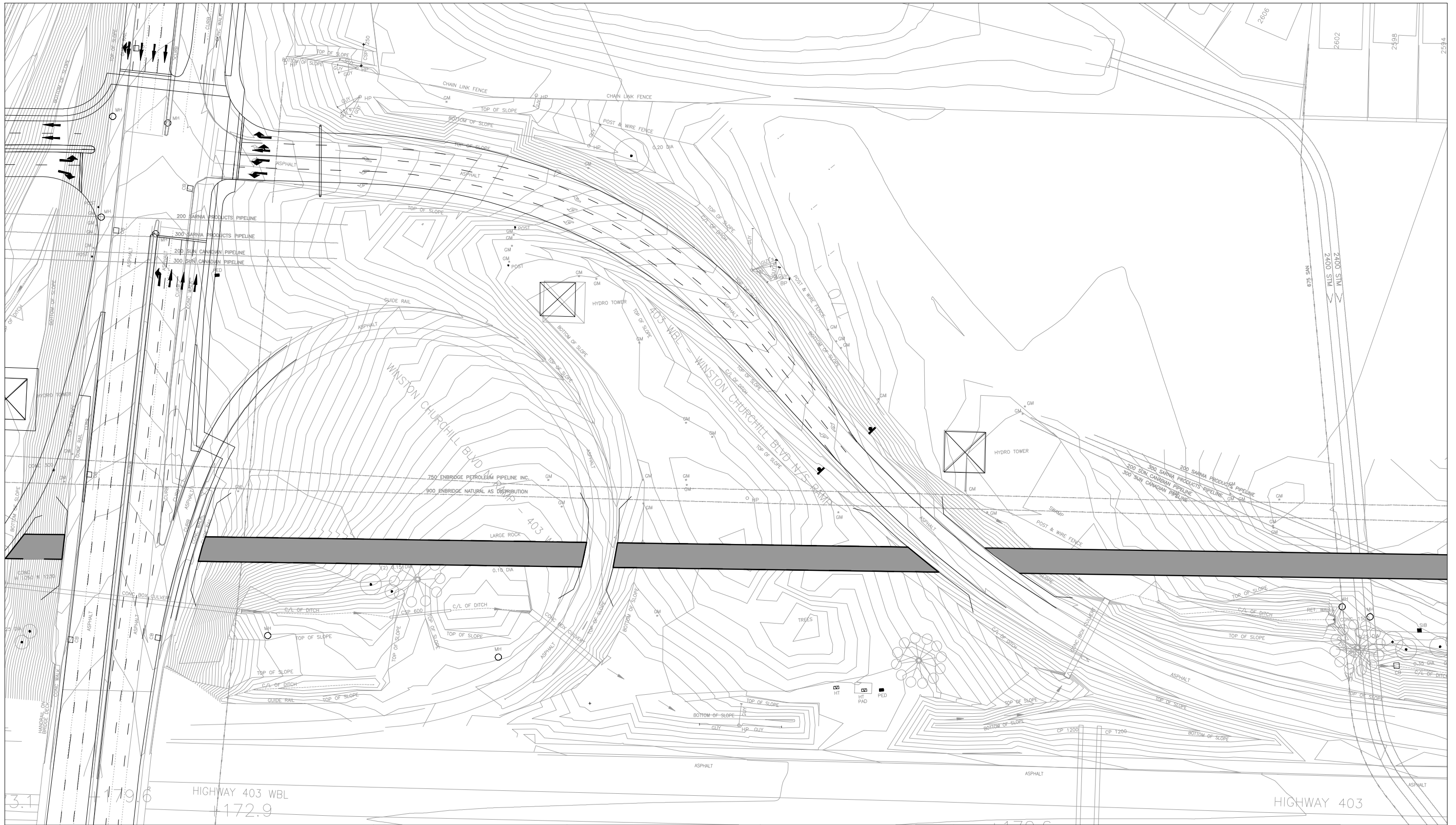
## **5.6 Consultation with Property Owners**




During the public consultation process for this area, little interest was exhibited by the public, with the exception of a single adjacent resident. The following table summarizes the resident's concerns and responses provided.

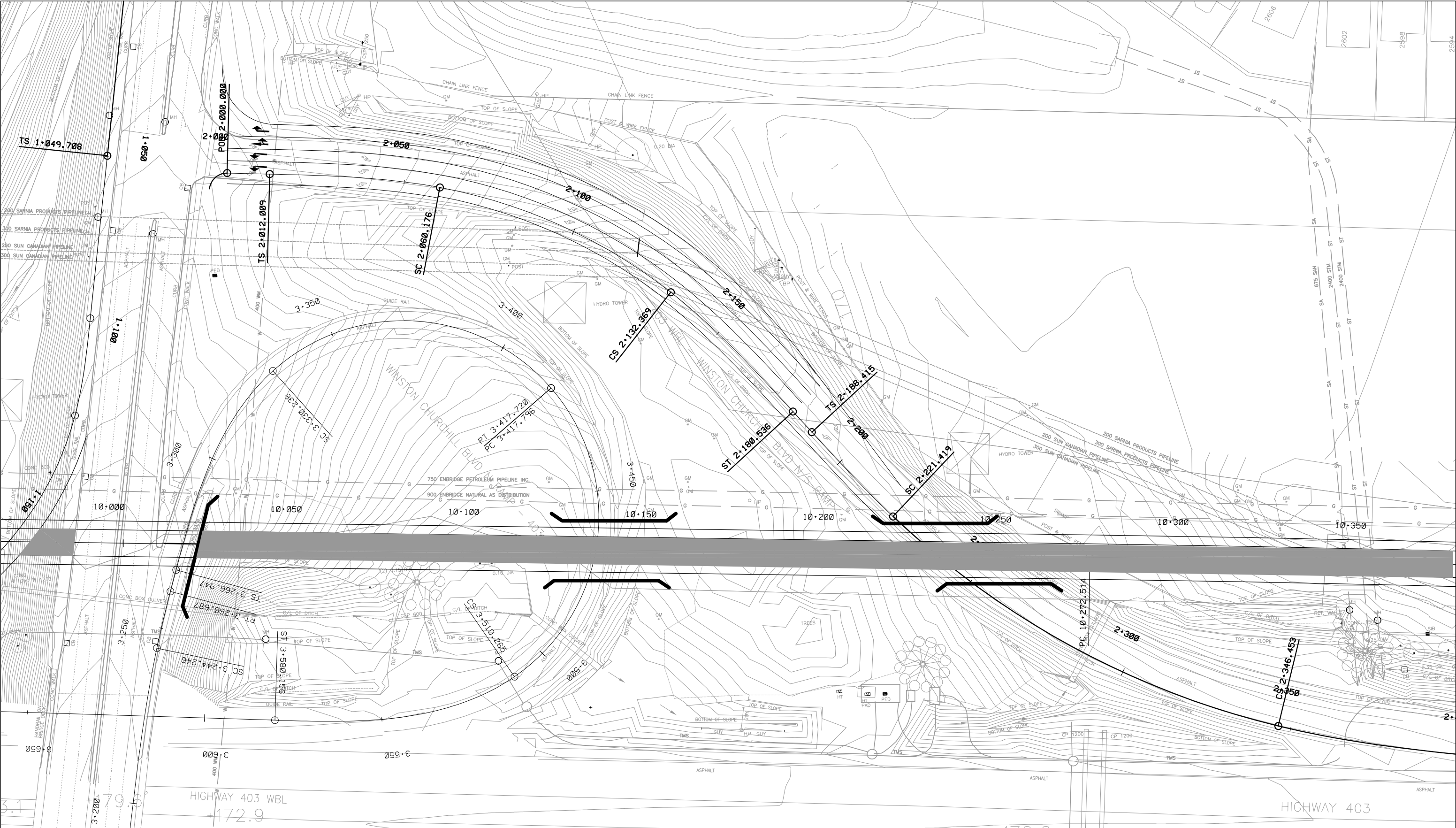
**Table 5-4: Summary of Comments and Responses – Winston Churchill Site**




<b>Summary of Concerns Regarding BRT Project Modifications (Public Consultation: June 24 &amp; 26, 2008)</b>		
<b>Concern Raised By:</b>	<b>Comment</b>	<b>Response</b>
Resident	<i>Visual</i> “Raising the BRT above the 403 access ramps will result in the residents of Ambercroft Trail watching buses fly past on the elevated roadway apparently every two minutes. ...I questioned whether a fence and/or landscaping would be installed to block the view and received very vague comments.	The recommended plan includes a landscaping concept (see Figure 5-6) to mitigate the visual impacts of the busway embankment crossing the Highway 403 S-W and E-N/S ramps at Winston Churchill Boulevard. Due to the proximity of the hydro corridor (branches) and pipelines (roots), only small trees and shrubs are permitted in the landscape concept. The north-facing embankment will be fully landscaped in the areas where it is visible from residential properties. The busway is a minimum of 160 m away from adjacent homes and would have only one or two buses visible periodically, compared to the existing view of Winston Churchill Boulevard and the Highway 403 ramps, which are closer to many homes and feature constant traffic. City of Mississauga policy does not extend to providing fences along the Parkway Belt.
Resident	<i>Noise</i> “The elevated bus route will greatly increase noise levels particularly in our gardens.”	The noise analysis conducted as part of the preliminary design exercise concluded that although there will be marginal increase in noise, it is insignificant given the existing noise generated in the Highway 403 corridor and therefore noise protection measures are not warranted. It is also important to note that the new busway profile would assist in mitigating the existing noise from the Highway 403 corridor.
Resident	<i>Pollution</i> “Heavier air pollution will roll down the unrestricted sides of the elevation into our back gardens.”	One of the major benefits the Mississauga BRT Project will bring is a reduction in greenhouse gas (GHG) emissions resulting from a combination of increased transit ridership and a reduction of automobile trips. The initial project estimates identified in the project benefits case submission to Transport Canada was an annual reduction of 6.3 tonnes of GHG emissions.
Resident	<i>Drainage</i> The rear of my home is very poorly drained currently. Standing water is evident some 12-18 inches below grade...There is no plan to alleviate the run off water from the raised roadway (A pumping station originally planned is being cut...\$\$\$\$\$ savings)”	All drainage from the new busway shall be accommodated as part of a comprehensive stormwater management and drainage program, ultimately draining to the Sawmill Creek stormwater management facility on the south side of Highway 403 via the twin 2590mm storm sewers crossing the busway east of the E-N/S ramp. There will be no impact to the drainage situation on adjacent residential properties.

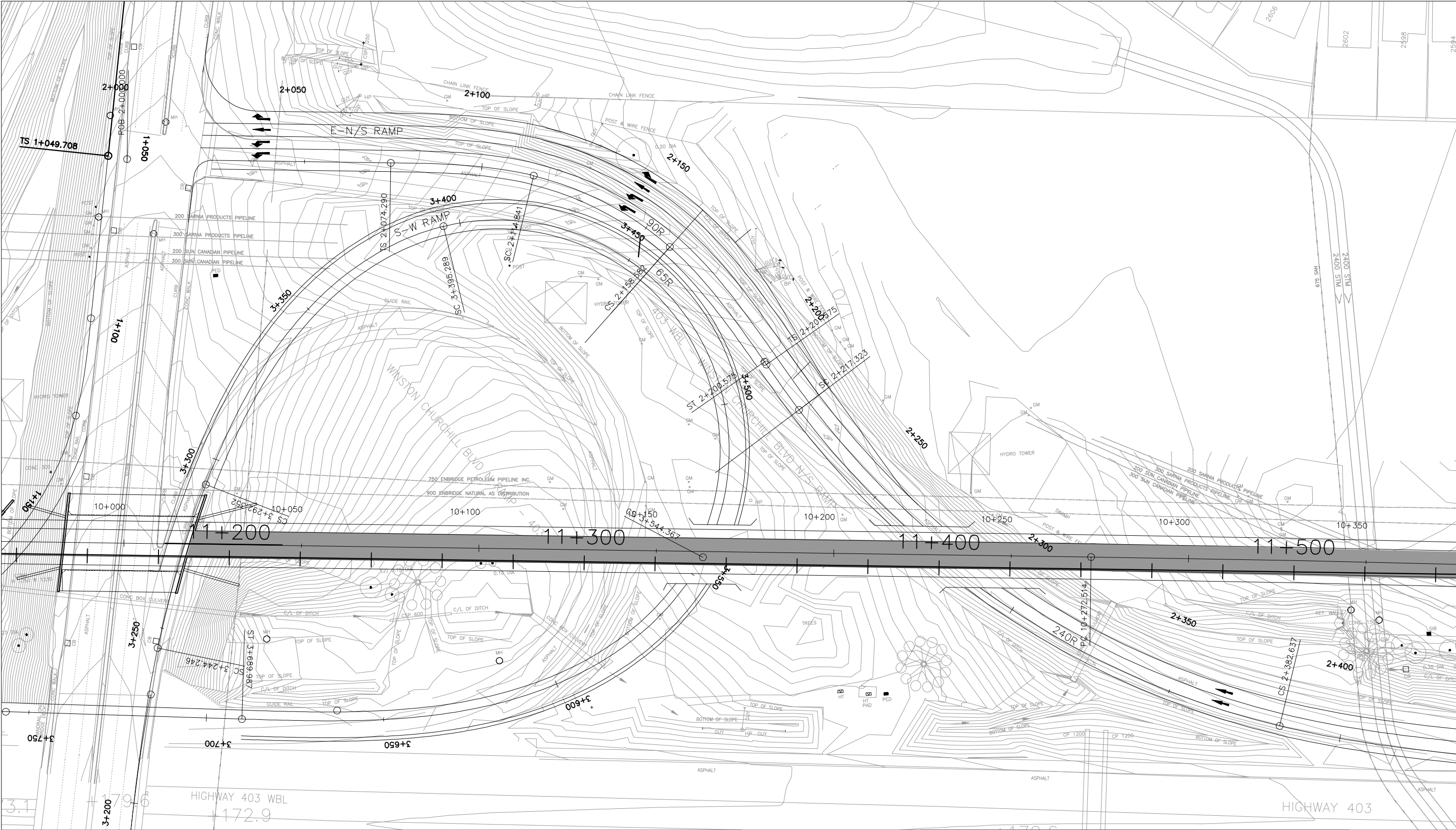
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	 <b>MCCORMICK RANKIN CORPORATION</b>	 	DATE: <b>December 2008</b>  SCALE: <b>1:1,000</b>	<b>MISSISSAUGA BRT PROJECT ENVIRONMENTAL ASSESSMENT ADDENDUM</b>  <b>WINSTON CHURCHILL BOULEVARD / HWY 403 INTERCHANGE ALTERNATIVE A: BUSWAY UNDER EXISTING RAMP LAYOUT</b>	<b>FIGURE 5-1</b>
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 <b>McCORMICK RANKIN CORPORATION</b>		DATE: August 2008	<b>MISSISSAUGA BRT PROJECT ENVIRONMENTAL ASSESSMENT ADDENDUM</b>	<b>FIGURE 5-2</b>
		SCALE: 1:1,000		



	 <b>MCCORMICK RANKIN CORPORATION</b>	 	DATE: <b>August 2008</b>  SCALE: <b>1:1,000</b>	<b>MISSISSAUGA BRT PROJECT ENVIRONMENTAL ASSESSMENT ADDENDUM</b>  <b>WINSTON CHURCHILL BOULEVARD / HWY 403 INTERCHANGE ALTERNATIVE C: BUSWAY OVER RELOCATED S-W RAMP</b>	<b>FIGURE 5-3</b>
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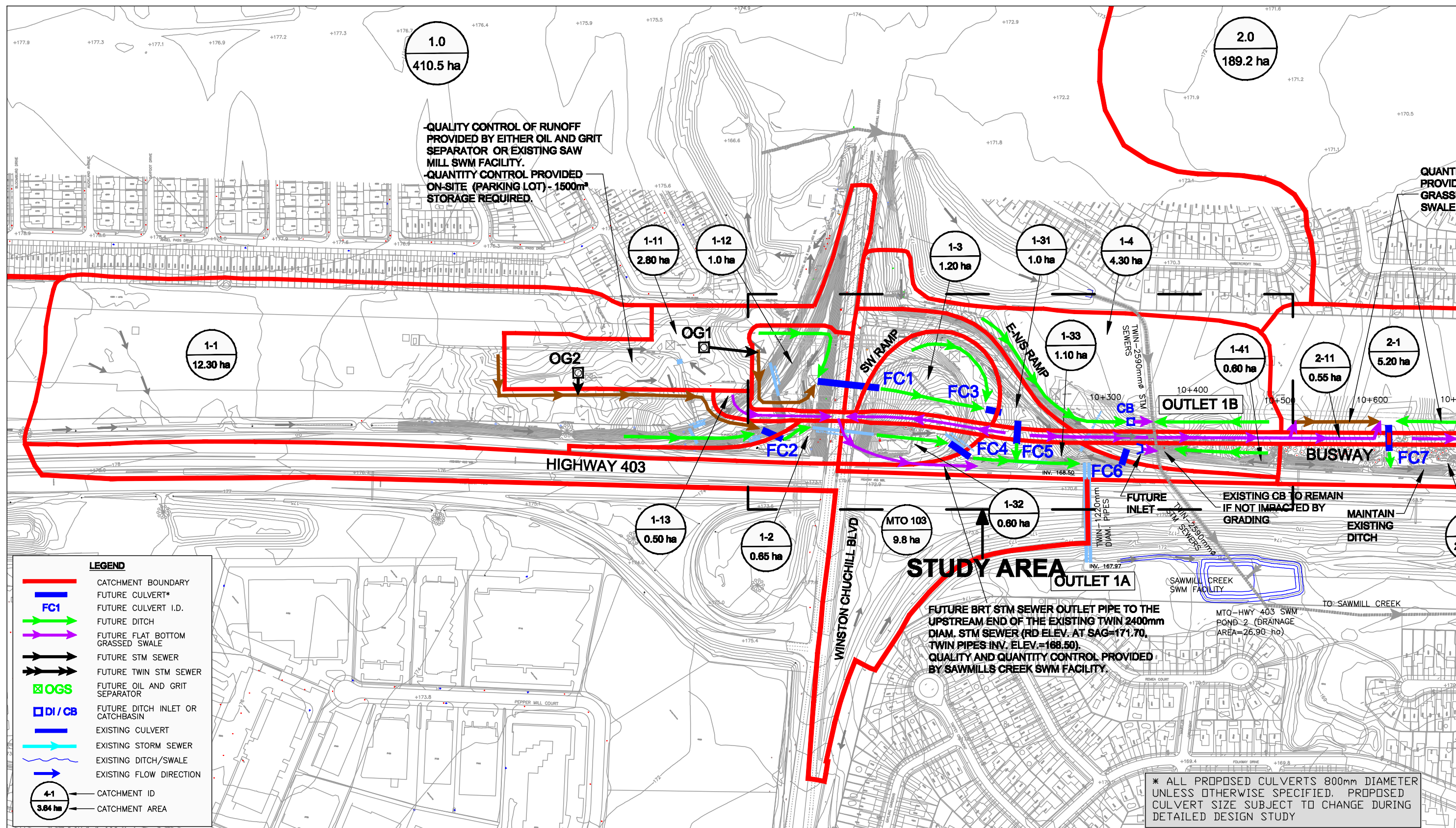

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*Transportation and Works*

August 2008

1:2,000

## WINSTON CHURCHILL BOULEVARD ALTERNATIVE PROFILES

5-4





## **6. HURONTARIO STREET CROSSING**

### **6.1 Need & Justification / Rationale**

#### **6.1.1 Current BRT Plan**

The approved (EA Addendum) alignment for the Busway plan (illustrated in Figure 6-1) crosses under Hurontario Street and under the W-N/S ramp to connect via an interim link to Centre View Drive. The alignment (in plan and profile) would be set so as to allow a future extension of the busway under Centre View Drive and into the City Centre area via a below-grade alignment immediately north of Rathburn Road.

Under the approved plan, Cooksville Creek would require minor works as part of the initial project, but the future extension of the busway would require significant creek works and flood protection. Approval of the plan by Credit Valley Conservation and under the Canadian Environmental Assessment Act relates to the ultimate plan, even though it would not be constructed as part of the current project.

#### **6.1.2 Outstanding Issues**

This crossing is physically constrained and very difficult to implement in a manner that avoids major traffic disruption on one of Mississauga's busiest arterials right at its Highway 403 interchange. Furthermore, the ultimate Cooksville Creek plan requires lowering the existing creek, creating a major new overflow culvert (cutting across both Rathburn Road and Hurontario Street), and altering the south end of its existing Highway 403 culvert. The busway would be below the regional storm flood line and would require floodproofing. The overall impact on capital cost is substantial – the initial phase alone would cost in the order of \$12 M, with significant additional costs for the creek works and busway extension.

A secondary issue is the uncertainty surrounding the transit infrastructure strategy within the City Centre. The City is reviewing City Centre development plans, the alignment and nature of the Hurontario Rapid Transit line through the area, and the configuration and location of the City Centre station.

### **6.2 Alternatives**

The primary alternative is to bring the busway to an intersection with Rathburn Road immediately east of Hurontario Street, allowing buses to use Rathburn Road (in general traffic, via curbside bus lanes, or in a median busway) to connect to the City Centre station.

At the point where the Busway encounters Sherwoodtowne Boulevard,, the street could either be closed or remain open. If Sherwoodtowne Boulevard's intersection with Hurontario Street is closed, the Busway could either run alongside Hurontario Street and use the existing W-N loop ramp as a two-way bus-only facility, or connect directly to the north side of Rathburn Road. If Sherwoodtowne Boulevard is to remain open, only the latter option is viable.

## 6.3 Evaluation / Analysis

Avoiding the creation of a new crossing of Hurontario Street in this extremely constrained and sensitive environment yields numerous benefits, first among them being a capital cost savings of in the order of \$7 million. All the concerns about Cooksville Creek (from both drainage engineering and environmental impact perspectives) are eliminated. The feasibility and operational impact of the construction on Hurontario Street / interchange traffic also become moot points and avoid significant MTO concerns regarding construction staging.

Given the uncertainty surrounding the City Centre transit strategy, it may well be better to minimize commitment to a particular piece of infrastructure (the Hurontario tunnel) in favour of a smaller investment that is more flexible and does not create preconditions on the future Hurontario scheme.

Of the various east side options, the one that maintains Sherwoodtowne Boulevard's access to Hurontario Street is preferred, in that Sherwoodtowne plays a notable role in the City Centre road network and does not overload other intersections with diverted traffic. It also maintains good two-way access to the business development east of Hurontario Street. The loop ramp connecting Rathburn Road with northbound Hurontario Street and Highway 403 is also a significant component of the City Centre transportation system. The additional cost for the structure and associated retaining walls is seen as an acceptable price to pay for maintenance of the Sherwoodtowne functionality.

Although the proposed plan would differ in terms of visual and noise impact from the previously approved plan, there are no Noise Sensitive land uses affected by the change. An office building immediately east of the alignment and south of Sherwoodtowne Boulevard is the only property affected by the visual and noise changes. Specialized construction techniques (e.g. drilled caisson retaining walls, rather than gravity or Mechanically Stabilized Earth walls) will be used to avoid impact on private property, and a site-specific landscaping plan will be used to mitigate the visual impact of the project.

**Table 6-1: Analysis of Alternatives for the Hurontario Street Crossing**

Analysis Factor	Busway Under Hurontario Street to Centre View Drive (Figure 6-1)	Busway Connection to Rathburn Road (Figure 6-2)
<b>Natural Environment Impact</b>	Requires future lowering of Cooksville Creek to accommodate ultimate busway extension through City Centre, and new major overflow culvert under Rathburn Road and Hurontario Street.	No impacts to Cooksville Creek or significant environmental features.
<b>Cost</b> (focus on major items that differ between alternatives)	Base Case:  Structures: \$7.9 M Retaining Walls: \$6.3 M Cooksville Creek crossing: \$0.8 M (plus future overflow pipe est. \$2 M) Construction / staging: \$0.3 M	Saves approximately \$7 million over baseline alternative: Structures: \$2.2 M Retaining Walls: \$6.8 M Cooksville Creek crossing: \$1.3 M (permanent solution) Construction / staging: \$minimal
<b>Drainage</b>	Busway would be below the Regional storm flood line, requiring floodproofing.	No drainage concerns.

<b>Analysis Factor</b>	<b>Busway Under Hurontario Street to Centre View Drive (Figure 6-1)</b>	<b>Busway Connection to Rathburn Road (Figure 6-2)</b>
<b>Traffic Operations</b>	No significant impact.	New intersection on Rathburn Road has no significant impact; Rathburn Road / Centre View Drive intersection will operate at capacity in peak hours; bus priority on Rathburn Road is subject to future study.
<b>Transit Operations</b>	Buses access City Centre Transit Terminal via Centre View Drive / Rathburn Road.	Buses access City Centre Transit Terminal via Rathburn Road.
<b>Construction Disruption</b>	Difficult to stage without major and costly traffic disruption to Hurontario Street and the eastbound Highway 403 off-ramp.	Temporary closure of Sherwoodtowne Blvd required during construction of busway crossing.
<b>Future Commitments</b>	Plan is tied to a grade-separated treatment (ultimate) along Rathburn corridor; may not match Hurontario Rapid Transit interface and evolving City Centre development plans.	Plan is flexible and does not create preconditions on a Hurontario rapid transit interface or City Centre development program.
<b>Property Impact</b>	BRT facility contained within public right-of-way	BRT facility contained within public right-of-way; temporary construction easement required for building retaining walls adjacent to existing development south of Sherwoodtowne Boulevard
<b>Noise</b>	No Noise Sensitive Receivers	Adjacent properties are commercial (not designated as Noise Sensitive Receivers). Existing noise level 72.1 dBA (Leq); Future noise level with previously approved BRT plan 74.6 dBA; Future noise level with BRT 75.0 dBA. Mitigation not warranted (per MOE / MTO Noise Protocol).
<b>Visibility</b>	Busway contained within Highway 403 interchange; no significant visual impact on adjacent properties.	Busway in walled cut adjacent to 4210 Sherwoodtowne Boulevard; on-site landscaping and walls will screen ground floor occupants from busway; upper floor offices will look down on busway alongside Hurontario Street. Landscaping and varied visual treatment of wall along west side of busway will be used to “soften” visual impact.

## 6.4 Conclusions / Recommendations

It is recommended that the BRT grade separation at Hurontario Street be achieved by use of the existing Rathburn Road structure rather than by building new structures through the Highway 403 interchange. The busway alignment would shift to pass under Sherwoodtowne Boulevard and along the east side of Hurontario Street to a new intersection with Rathburn Road. The proposed alternative is shown on Figure 6-2.

The City will investigate alternative transit operational options along Rathburn Road as part of a separate study, beyond the scope of the current Preliminary Design project.

The City will work with the owner of the adjacent office building at Sherwoodtowne Boulevard to develop a mutually acceptable structural and landscaping plan for the segment of busway adjacent to the property.

## **6.5 Environmental Effects and Commitments to Mitigation**

The following section discusses environmental effects and commitments to mitigation only as they differ from those previously identified in the 1991 Environmental Assessment and the 2005 Environmental Assessment Addendum for the Mississauga Transitway.

### **6.5.1 Physical Environment**

#### **6.5.1.1 Roads**

##### *Operations*

The following is a summary of the analysis and anticipated operational impacts of BRT in vicinity of Hurontario Street:

- Impacts assessed assuming that
  - median eastbound through lane on Rathburn Road from west of Centre View Drive to proposed BRT access immediately east of Hurontario Street is designated for buses only.
  - Eastbound through lanes at transit terminal entrance assumed to be realigned to match curb lanes at Centre View Drive to develop BRT lane adjacent to eastbound left-turn lane.
  - Eastbound BRT lane on Rathburn Road ends at proposed entrance to BRT right of way (to be signalized if necessary).
- Rathburn Road/Centre View Road intersection will operate at capacity with critical movement volume-to-capacity ratios between 0.96 and 0.98 and levels-of-service 'E' during the weekday morning peak hour. Afternoon peak hour operating conditions reflect volume-to-capacity ratios between 0.97 and 1.01 and levels-of-service 'D'.
- Westbound queue extending from Centre View Drive (95<sup>th</sup> percentile length = 200 metres) approaches the proposed BRT access at Rathburn Road. BRT lane will allow buses to avoid this queue.
- Operational impacts at the proposed BRT access to Rathburn Road reflect peak hour volume-to-capacity ratios of up to 0.45 and levels-of-service 'C' or better.

Subsequent design work to relocate the existing southbound Hurontario Street to westbound Rathburn Road ramp away from the Rathburn / City Centre Drive intersection is anticipated to provide significant relief to the intersection and improve the Level of Service and queuing situations.

The following is a summary of the analysis and anticipated operational impacts of construction staging for the proposed BRT access to Rathburn Road:

- Impacts assessed assuming that Sherwoodtowne Boulevard access to northbound Hurontario Street will be temporarily closed.
- Current demand approaching Hurontario Street from Sherwoodtowne Boulevard will divert to northbound Central Parkway, northbound Hurontario Street via Robert Speck Parkway or Square One Drive and Confederation Parkway or Mavis Road via Rathburn Road.
- Operating conditions will improve at the Highway 403 W-N/S Ramp terminal intersection while impacts at the recently signalized Hurontario Street intersection with Square One Drive can be adequately accommodated.
- Operating conditions at the Hurontario Street intersection with Robert Speck Parkway will reach capacity during the afternoon peak hour with critical volume-to-capacity ratios rising from between 0.70 and 0.94 under existing conditions to between 0.92 and 0.99 under the temporary conditions. While the southbound left-turn level-of-service deteriorates to 'F' (from 'E' under existing conditions), all other levels of service and queuing characteristics remain similar to existing conditions.

The temporary condition would be expected to last in the order of four months. Details of the traffic analysis are presented in Appendix D.

### *Construction*

The busway in this section crosses (and is grade separated at) Sherwoodtowne Boulevard. Traffic operation effects during the period of structure construction will be mitigated through conventional traffic management programs that maintain a level of traffic capacity and safety acceptable to the City of Mississauga. Detours, lane closures, temporary / overnight closures, special signals, lane markings, and signage will be used as appropriate. The motoring public will be advised of planned activities that may result in traffic disruption in advance (both temporally and physically). Bicycle and pedestrian access along Sherwoodtowne Boulevard will be maintained at all times. Capacity reduction will not be scheduled simultaneously on parallel adjacent roads. These mitigation measures will reduce impacts to a level acceptable to authorities and the public.

The adjacent or affected traffic signals will be re-timed as appropriate to accommodate the modified traffic patterns during the construction period. The duration of each disruption or lane closure will vary, but at most will occur over a single construction season (April – November). A program of traffic management that maintains capacity and safety will be developed in the Detail Design process.

In addition to the disruption associated with the above noted structure construction, corridor roads will be used by construction equipment, temporary construction access points will be implemented, and a substantial amount of truck traffic will be associated with the disposal of excess fill.

Most construction will, however, take place within the BRT right-of-way and will not impinge on or affect traffic operations on the adjacent or nearby roads.

### *Operation and Maintenance Effects*

Once the BRT facility is in operation, there should be no special ongoing operational or maintenance effects on the road system or general traffic operations. The new structures will be added to the inventory of road structures in Mississauga and will follow conventional inspection, maintenance and rehabilitation schedules.

### *Significance*

The construction of the busway structure will have a localized disruptive effect on roadway traffic. With the implementation of the above noted mitigation measures potential for adverse effects can be minimized and no significant residual effects should occur.

## **6.5.1.2 Utilities Within / Crossing Corridor**

### *Pipelines*

No buried pipelines are affected by the proposed alignment modifications at the Hurontario Street / Sherwoodtowne Boulevard area.

### *Other Utilities – Hurontario Crossing*

Between Hurontario Street and Cawthra Road, the BRT corridor encounters MTO high mast light standards at both interchanges, along with power and communications lines related to the Ministry's Traffic Management System on Highway 403. One high mast light pole is on the busway alignment approximately 250m east of Hurontario Street and will be shifted. The power and communications lines along Highway 403 may need to be relocated; the need to do so will be confirmed in Detail Design.

There are no effects on Hydro One facilities at this location.

For discussion related to *Construction Effects, Operation and Maintenance Effects* and *Significance* of utility impacts, please refer to Section 5.5.1.2.

## **6.5.2 Natural Environment**

### **6.5.2.1 Watercourse Crossings**

The recommended alignment significantly reduces any impacts of the EA-approved alignment on Cooksville Creek. As previously noted, the watercourse is crossed on a new alignment where the Creek is already in an enclosed culvert. The proposed construction methodology for altering the Cooksville Creek twin cell box culvert is to work on one cell at a time while the other remains in use by the creek. In this manner, there will be no introduction of sediment or other potential contaminants.

### **6.5.2.2 Vegetation, Wetlands, and Wildlife**

The BRT facilities in this area will result in the permanent removal of cultural meadow and associated habitat. However, the effect is limited given the common, tolerant nature of this vegetation community, habitat type and associated wildlife compliment.

The proposed busway alignment change will have no impact on significant vegetation. The only vegetation impacted will be that of aesthetic landscaping. Impacts to the Cooksville Creek wetland incurred under the previously approved alignment are eliminated.

#### **6.5.2.3 Species of Conservation Concern and Species at Risk**

The proposed changes to the approved plan / profile will not have any effect on species of concern / risk.

#### **6.5.2.4 Stormwater Management**

Section 5.5.2.4 discusses the *Potential Construction Effects*, *Hydraulic Criteria*, and *Stormwater Management Criteria* for the entire Mississauga Bus Rapid Transit Project. The following is a summary of the stormwater management plan associated with the recommended alternative for this area of the project.

The outlets that have been identified under existing conditions for the Hurontario / Rathburn study area include:

- Outlet 4 – Twin 1850 x 1000mm CSPA and Municipal Sewer; and
- Outlet 7 – Intermittent Drainage Channel and Municipal Sewer.

The outlets listed above will be utilized under proposed drainage conditions and the existing drainage regime will not be greatly altered under proposed conditions. Existing peak flow rates to each outlet will not be exceeded under proposed conditions. All the existing storm sewer outlets will be re-evaluated during the detail design stage for carrying capacity of the 100-year peak flood flows under the proposed development condition.

Enhanced water quality control will be provided for all new development.

The drainage/stormwater management scheme for this Study Area is illustrated in Figure 6-3.

#### **6.5.2.5 Groundwater**

The proposed change in busway profile and alignment will have the effect of reducing the groundwater issues associated with the previously approved alignment. The busway will be similar in elevation to the adjacent building foundation, and will be above the Rathburn Road and Cooksville Creek elevations, so little impact on groundwater is expected.

### **6.5.3 Socio-Cultural Environment**

#### **6.5.3.1 Archaeology**

For potential impacts and proposed approaches to mitigate impacts for the entire project, please refer to Section 5.5.3.1.

### 6.5.3.2 Heritage

Compared to the approved plan, no additional adverse environmental effects to heritage resources are anticipated during this phase of the project.

### 6.5.3.3 Noise

There are no noise sensitive areas affected by the proposed busway alignment modification at Hurontario Street. The commercial building adjacent to the site is soundproofed against the noise currently generated by traffic on Hurontario Street, Rathburn Road, and Highway 403. The existing noise level at the face of the building (72 dBA daytime Leq) is expected to increase to 74.6 dBA in the future without the BRT project, and to 75.0 dBA with the proposed BRT plan. The impact of the BRT project on noise levels at the adjacent building is therefore seen as negligible.

## 6.6 Consultation with Property Owners and Developers

There was very little interest in this section of the EA Addendum exhibited during the public consultation process. The owner of the commercial building adjacent to the Hurontario / Sherwoodtowne site, however, indicated a number of concerns regarding the project, as summarized below. Consultation with the property owner will continue through the busway design and construction period. Resolution of any issues that arise is through the processes set out in the *Planning Act*.

**Table 6-2: Summary of Comments and Responses – Hurontario Site**

<b>Summary of Concerns Regarding BRT Project Modifications (Public Consultation: June 24 &amp; 26, 2008)</b>		
<b>Concern Raised By:</b>	<b>Comment</b>	<b>Response</b>
Business	“The proposal has given no regard to the huge expense I went to landscaping the city property at my expense and creating the bridge-like structures to invite walking traffic.”	The busway would occupy public right-of-way. A pedestrian bridge is proposed to maintain the link between the private property and Hurontario Street. An extensive landscaping program would be applied, to screen the view of the busway from the private grounds.
Business	“It gives no consideration to how close the buses will be to my building and the extra noise and vibrations that will make it extremely difficult to keep my building leased and it will lower my net rent and drastically reduce the value of my building.”	The distance between the top of the busway wall and the face of the building will be between 8 m and 11 m. This offset is within the typical range for street-facing office buildings in downtown areas. 4310 Sherwoodtown Boulevard sits within 7 m of Sherwoodtowne Boulevard (at grade).
Business	“It could easily affect the structure of my building and cause substantial structural problems.”	The busway walls will be formed of drilled caissons, which require little space and are designed to avoid impact on adjacent properties. A detailed pre-construction structural condition survey of the office building will be undertaken, to serve as a base line against which post-construction conditions may be compared.
Business	“I looked at the area and the city has lots of opportunities to route	The presence of the Highway 403 interchange and Cooksville Creek make it

	the buses under Hurontario that wouldn't disturb any existing structures"	very costly to overcome technical constraints. There are in fact very few opportunities to cross Hurontario Street in the BRT corridor, and the opportunity to use the existing Rathburn Road structure is unique.
Business	"I have invested most of my net worth into this building and to have it threatened by the city who always indicated that the Rapid Transit would run along the North side of the 403, is just not acceptable."	The Mississauga Transitway alignment, as approved in 1993, is on the south side of Highway 403. The alignment is contained within public property designated for transportation functions and does not threaten any private property.
Business	"Alternatively, I would consider \$8 million settlement as prepaid depreciation, with substantial engineered shoring at the city's expense to ensure no structural problems and a 100-year warranty as to future structural damage caused by the excavation so close to my building. Also, to have the route totally covered with the existing landscaping replaced about where it currently exists, above the new proposed bus route."	As noted above, the project does include drilled caisson walls as a means of avoiding any structural problems with the pre-existing building. The landscaping plan for the site (see Figure 6-4) screens the view of the busway from the building grounds. The architectural / landscaping treatment of the west wall of the Busway will reflect its visibility from offices on upper floors of the building. Financial considerations are not part of EA Addendum Review.

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